THE

VETERINARY JOURNAL

APRIL 1903.

Editorials.

THE LAYMAN AND VETERINARY SCIENCE.

IN another part of the JOURNAL we print a portion of an address delivered last month by a distinguished East Lothian farmer on agricultural affairs, and to this we direct our readers' attention. We are sure they will be delighted with the plain homely common sense displayed by Mr. Hope in his expression of opinion. Undoubtedly he is severe in his satire, but let us see if his satire is not deserved. Farming, it must be remembered, is a business in which practice counts for much more than theory. Of course in farming as, for instance, in brewing, everything is governed in the final resort by scientific laws, but generally the operation of these laws is simple and circumscribed, whilst the variation of conditions is enormous. That means that the ordinary well-educated farmer, who is watchful and observant, and refuses to be bound by mere traditions, but keeps his mind open to rational suggestions, is much more likely to succeed in raising fine crops or producing a fine stock of sheep or cattle than the scientifically trained specialist—the man who has profoundly studied chemistry, botany, or geology—who takes up farming as a means of testing his theories. Of course, as champions of science we uphold its banner through thick and thin, but we do not forget that the operation of scientific law is to the most of mankind very difficult to trace. It requires a special turn of mind as well as a special training to connect cause and effect in scientific matters, and it must be confessed that the talent for abstract reasoning is not common amongst our countrymen. They are too impatient, and besides they have been in the past too successful with their happy intuitions, to care much about theory or principle. A counterpart to this is found in matters ethical and religious. The Englishman generally trusts to his impulses and to his wholesome traditions, and generally manages to lead a clean and respectable life. But intuitions may become distorted and impulses weakened or mistaken, and the individual or the nation may go quite astray. This is the danger which threatens us perhaps more than any other of the civilised nations of the world, and the ques-

tion comes to be—How are we to so blend theory and practice, principle and conduct, that we shall be able to maintain our position as a righteous and a prosperous people? The question is a momentous and enormously difficult one, and we must keep in view when discussing it the fate that has overtaken other nations. The Greeks were the most polished and refined people of ancient times; from them we have learned all our philosophy and all our art; our literature, and even our science, bear their indelible mark. Yet the Greeks, perhaps from the over-delicacy of their refinement, were unable to bear the strain of life, and they gave way under the iron pressure of the Romans. The Romans in their turn, through being unimaginative and too little philosophical, failed to adapt themselves to the growing needs of their times, and their great empire gradually vanished under Christian pressure. The Phœnicians, the most active of the business men of antiquity, being entirely materialistic, have left scarcely any trace of their influence; the Jews, the most intensely spiritualistic race that the world has seen, still dominate the world with their ideas, but have no separate existence as a nation.

How are we then to avoid the errors of those who have preceded us in the sovereignty of the world? Not, says Mr. Hope, by the encouragement of smatterers, and we quite agree with him. We are entirely in favour of scientific education, provided it be thorough. We quite concur with Mr. Herbert Spencer when he says, "Acquirement of every kind has two values—value as knowledge and value as discipline." By all means, therefore, let our young farmers drink their fill at the fountain of scientific knowledge, but let them remember that the water from that fountain not only strengthens and exhilarates, but sometimes intoxicates. Pope, in words which are familiar to us all, says—

> "A little knowledge is a dangerous thing;
> Drink deep, or taste not the Pierian spring."

But this, let us remember, is a warning which is frequently misunderstood and misinterpreted. The poet does not discourage the acquisition of knowledge, nor does he overlook the fact that all knowledge must begin by being little; he is quite aware that even a little knowledge is better than total ignorance. But he does warn us against vanity—especially intellectual vanity; he detested the pedant who fancies he knows everything that is worth knowing; he detested the prig who with his shallow intellect thinks he can apply a measuring-rod to all human affairs. Better the plain honest farmer who goes by rule of thumb, than the conceited doctrinaire who, having been for a short time an irreverent intruder in the temple of the Muses, swaggers about ever afterwards in the guise of one of their high priests. But we do not despair of combining the highest teaching of science with the most successful practice of husbandry. If the young farmer has drunk deep of the Pierian spring, if he has even approached science in a humble and

reverent spirit, purging himself of all vanity, he may quite well, whilst following his father's cautious precepts, begotten of hard experience, gradually introduce improvements into the methods of tillage which will repay his outlay of skill and courage as well as capital, and encourage him to further investigations into scientific principles. Such a man, however, is not likely to pay much attention to, or receive much benefit from, the ordinary popular lecture. In the first place, his mind has had the benefit, as Spencer says, of the discipline of careful and organised study; in the second place, he knows so much that he wants to know more, and this "more" is acceptable—is indeed tolerable—only when it comes from the fountain-head. No empiric knowledge will satisfy him; he wants to know the ultimate why and wherefore; his early training makes this desirable, the need of careful husbandry makes it in his eyes, and rightly, indispensable.

We wonder if Mr. Hope included in his condemnation the peripatetic veterinary lecturers connected with the Agricultural Colleges: we should not be surprised if he did, and if he did he has our warmest sympathy. To our readers we say *experto credite.* We ourselves have been in the humiliating position and we know what it means. Never again will we undertake what we must call the profanation of sacred things. We scarcely regret the painful experience, urged upon us by authority which we could not at the time resist; it opened our eyes to certain facts which we did not then know to exist; it enables us now to speak with some authority. In the first place, popular lectures on veterinary subjects seem to us unfair to our professional brethren; in the second place, they are a source of danger to the animal creation; and in the third place, they foster a wrong habit of mind.

Let us take the subject of injustice to the profession. We would not have our readers think that we look upon the veterinary profession as a mere trade union. The time may come—we think it is coming—when professional men will have to band themselves more closely together for protection against the attacks and inroads of the working classes on the one hand and the capitalists on the other, but probably the lead must be left to our medical brethren. In the meantime it is clearly our duty to stand shoulder to shoulder, and take care that men who have spent many years in the acquisition of their knowledge and the development of their skill shall not be deprived of their legitimate reward. We ourselves have given practical evidence of our convictions on this point by refusing to hold classes of agricultural students. We regard such people as interlopers, as men who would still further reduce the scanty rewards that fall to our hard-working profession. Of course we are not so foolish as to think that enormous incomes could for long, if at all, be secured to veterinary surgeons by combinations or trusts; we do not aim at such results, but we do aim at securing an income adequate to the expenditure of labour.

As to the second point we need say little. We know the ravages made by the medical quack; those caused by the amateur veterinary surgeon are scarcely less disastrous.

On the third point we must say a few words at the risk of repeating what we have said in previous articles. In order to study medicine a man must start with a special habit of mind bestowed upon him by nature. It is not given to every one to penetrate into the mysteries of science; only to the devout and whole-hearted worshippers do the Muses reveal themselves. *Odi profanum vulgus*, the words of Horace, may be put into the mouth of any of the celestial Nine. But even the devout worshipper must go through an extended training, and that training must be carefully graduated. A veterinary student has to pass his preliminary examination in order to give proof, for instance, that the Latin, Greek, and French terms used in medicines shall not come to him unawares. Then he studies such introductory subjects as botany, zoology, and chemistry, and only after such an elaborate preparation is he allowed to enter the inner temple. The importance of introductory training was brought very vividly before us one day when talking with a learned friend. His training had been rather philosophical than scientific, but he was quite a well-informed man on general science. This friend told us that he had bought Darwin's "Origin of Species," and tried to read it, as being one of the epoch-making books of the century. He confessed that he had utterly failed, from want of training in zoology and botany, whilst his son, a lad of twenty who was studying medicine at the University, read the book quite easily and with much profit to himself. We conclude by suggesting that the rustic mind might be enlightened by popular lectures from medical men who would—we fear only pretend to—teach expeditious and inexpensive methods of curing all fleshly ills; or by lectures from a peripatetic lawyer, who would give instruction in the making of wills and marriage-contracts, in the drawing of leases and the preparation of transfers. We are quite sure that such a proposal would be hailed with secret delight by the legal profession. "I am always glad," said a lawyer to us once, "when a client becomes vain and thinks he can transact his law business without my help. He has always to come back to me in the end, and my account against him assumes magnificent proportions."

WARNING.

In our January number we called the attention of the Board of Agriculture to the danger that existed of the importation of new diseases into this country, and to the lack of knowledge regarding such, owing to the want of opportunities for its professional advisers to make practical acquaintance regarding them, and we again call their attention to this point.

From information received we learn that Veterinary Captain H. Pease, Principal of the Punjab Veterinary College at Lahore, India, has recognised the disease known as "Dourine," Maladie du Coït, or Equine Syphilis amongst the Government stallions in that part of the Indian Empire, and discovered the Trypanosoma of Buffard and Schneider in blood taken from the characteristic patches on the skin of the affected animals.

The man in the street will probably say, "What on earth has this disease in India got to do with England." If we stop to consider, however, we will remember that since the South African War a demand has arisen for small horses for the cavalry, also for ponies, especially those good enough for polo. Certain high authorities on the matter have strongly recommended crossing the indigenous mare, "The Exemoor, the New Forest, the Welsh," &c. with the Arab stallion, and we know that a considerable number of these have been brought from Bombay. Under the present conditions of total absence of inspection, we consider that there is a very real risk of the importation of "Dourine." The majority of veterinary surgeons have only heard of the disease, exceedingly few in the United Kingdom having ever seen a case. The symptoms are obscure, and an animal suffering from it might easily be landed under the supposition that he was out of condition from the effects of the voyage, and before the true state of affairs was discovered mares might be covered and the disease established.

That this is not a theoretical danger can be proved by the case of France and the United States, where Dourine was imported in the first by barbs from Algeria, and in the States by Pecherons and Normans from France. We desire to bring this matter to the notice of the Board of Agriculture, together with the whole question of exotic diseases; not that we expect for one instant that this somniferous body will take any action, but that when the day comes in which we are invaded, "as most assuredly it will come," and the public in their usual intelligent fashion begin "to abuse the doctor," we at all events will be able to point out that we long ago foresaw what would happen.

THE CANCER RESEARCH FUND.

I would urgently call the attention of all my professional brethren to the subjoined notice which I have received from the Secretary of the Cancer Research. The matter is of such supreme importance that the mere mention of it is sufficient to recommend it to the whole veterinary profession. It is hardly necessary to remind the readers of the *Journal* that the Patron of the Cancer Research is His Majesty the King, that the President is the Prince of Wales, and that on the list of Vice-Presidents are such honoured names as

Lord Lister, Lord Strathcona, the Right Hon. A. J. Balfour, Sir Frederick Bramwell, and Sir William Broadbent.

W. O. W.

"CANCER.—The Superintendent of Cancer Research will be much obliged if veterinary surgeons having animals of any description suffering from cancer brought under their notice will communicate with him before destroying them, in order that such animals may be purchased and forwarded alive to him. Fresh pathological material will also be greatly accepted. Address all communications to Dr. BASHFORD, Examination Hall, Victoria Embankment, London, W.C."

Original Papers.

MAL DE CADERAS.

BY DR. ELMASSIAN, DIRECTOR OF THE BACTERIOLOGICAL INSTITUTE OF PARAGUAY.

Translated from the Spanish by Vety.-Capt. E. P. BARRY, 2nd Life Guards.

IN South America there is a disease known as Mal de Caderas (or disease of the hind quarters), of an infectious nature, that attacks the whole equine race, but especially the horse. It is caused by a flagellated organism whose morphological characteristics permit us to place it amongst the group of trypanosoma. As far as external symptoms the disease is marked by emaciation, great anæmia, and progressive paresis, commencing in the hind quarters, which spreads over the whole body, ending in death.

Although sporadic cases may be seen they are not common, and more generally the "mal de caderas" is noticed in an epidemic form, invading whole districts and regions. The central and eastern parts of the South American continent are ravaged by it. Paraguay and Bolivia, and certain parts of the Argentine and Brazil, are included in the infected zone.

It is now some time ago, in conjunction with Señor Migoni, that I commenced the study of this malady, and at a Conference of the National Council of Hygiene of Paraguay, held on 19th May 1901, we demonstrated for the first time its true nature as well as the clinical symptoms by which it may be recognised. Since then I have been able to complete my former observations, which were naturally somewhat imperfect, especially as regards symptoms and pathological anatomy, and I can now bring forward some new experiments and observations that I have been able to make.

Before doing this, however, I shall have to refer to my former publication, and give an outline of the question even at the risk of repetition, which I would if possible have avoided, only that I think it advisable, to clearly understand the matter, that the two series of observations should be connected together.

Thanks to the help which the Government of Paraguay has given us, and also the support which I have received on every occasion from the President, Señor Don Emilio Acebal, and the Minister of the Interior, Señor Don Guillermo de los Rios, I have been enabled to carry out my investigations, and I take this opportunity of expressing to these gentlemen my most sincere thanks.

Although all equines are liable, the horse appears to be particularly susceptible, and in the infected districts has been replaced by the mule and ass, which animals show greater powers of resistance. I will therefore take the evolution of the disease in the horse as the type, and confine myself to those facts that have come under my own personal observation.

In the horse the attack is at its commencement insidious, and, apart from emaciation, there is at first nothing to excite suspicion, as the appetite is preserved. After a few days there appears to be great weakness—the patient lies down, respiration is difficult, the eye is fixed, head hung down, and he appears to be suffering from extreme debility. The temperature is high, 40° to 41° (104° to 105·8° F.), and at the earlier stages this is the only diagnostic symptom. This high temperature lasts for about twenty-four hours, when it drops to normal, and the animal apparently recovers.

In cases in which the disease is naturally acquired (*i.e.*, those not produced by inoculation) it is difficult to determine what period must elapse before more definite symptoms appear, but when they do the first usually noticed is difficulty in moving the hind legs, the pace being slow, the limbs dragged, with the toe on the ground, and swaying and unsteadiness of the hind quarters, and from this peculiar gait the disease has taken its name.

The variations in the temperature are more or less regular, the rise and fall being less in the earlier stages than later on, the maximum being 41° C., and the minimum 34° C. (105·8-93.2 F.) There is a diminution in the number of red blood corpuscles to a half or sometimes even a fourth of the normal, and they are pale in colour through a diminution in the amount of hæmoglobin present. There is, however, increases in the white corpuscles, and the visible mucous membranes are pallid and anæmic.

In the earlier stages the urine is high coloured, and contains a large number of red blood corpuscles, so much so, that in certain cases it appears like pure blood. It is also thick and glutinous in consistency, and contains a large quantity of albumen, but we have never been able to detect the specific organism in either it or the serum. The quantity of urine secreted varies, and seems to depend on the amount of irritation of the bladder that may exist.

Beyond a dry intermittent cough, that is not invariably present, the respiratory organs do not appear to be affected. In certain very severe cases we have noticed small isolated patches of lobular pneumonia, and it is worthy of note that in all such the progress of the disease was very rapid, and during life the numbers of the organism found in the blood were enormous.

The digestive system also is not implicated, except during the periods of very high fever, "which as stated are intermittent," the appetite is preserved to the last. There is, however, in the later stages torpidity of the large intestine and accumulation of fæces, but this and paralysis of the sphincter ani can all be readily accounted for by the excessive weakness of the animal.

A number of patches form on the skin an inch to an inch and a half in diameter, and over which the hair falls off. These patches form and disappear in a short space of time, the skin over them being swollen, and where there is no pigment, red. They appear on the withers and back and near the articulations, a common position being at the lower part of the abdomen and inside of the fore-arm.

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The eyelids become puffed and swollen, the conjunctiva red, and there is at times a profuse muco-purulent discharge, but no parasites have ever been found in it. There is also temporary opacity of the cornea, almost invariably at the lower border, that appears to be an interstitial keratitis. It is seldom or ever accompanied with ulceration, and clears up in a few days.

I have never observed any œdema or ulceration of the genitals, although this is a point that I have carefully looked for, and inoculated a stallion by scarifying the penis. The disease developed in the usual manner without giving rise to any symptoms on the part.

I have not been able owing to insufficient data to determine the various stages of the disease contracted naturally, and the results of my observations are based on inoculation experiments.

In such the temperature rises on the seventh day, when the organism can be discovered in the blood. Depending on the number of parasites injected, this lasts for one to two days, when the temperature again falls, paresia appearing in about two weeks, and the disease fully established in a month, but from what I have been able to gather when caused naturally this period is longer, from forty to fifty days.

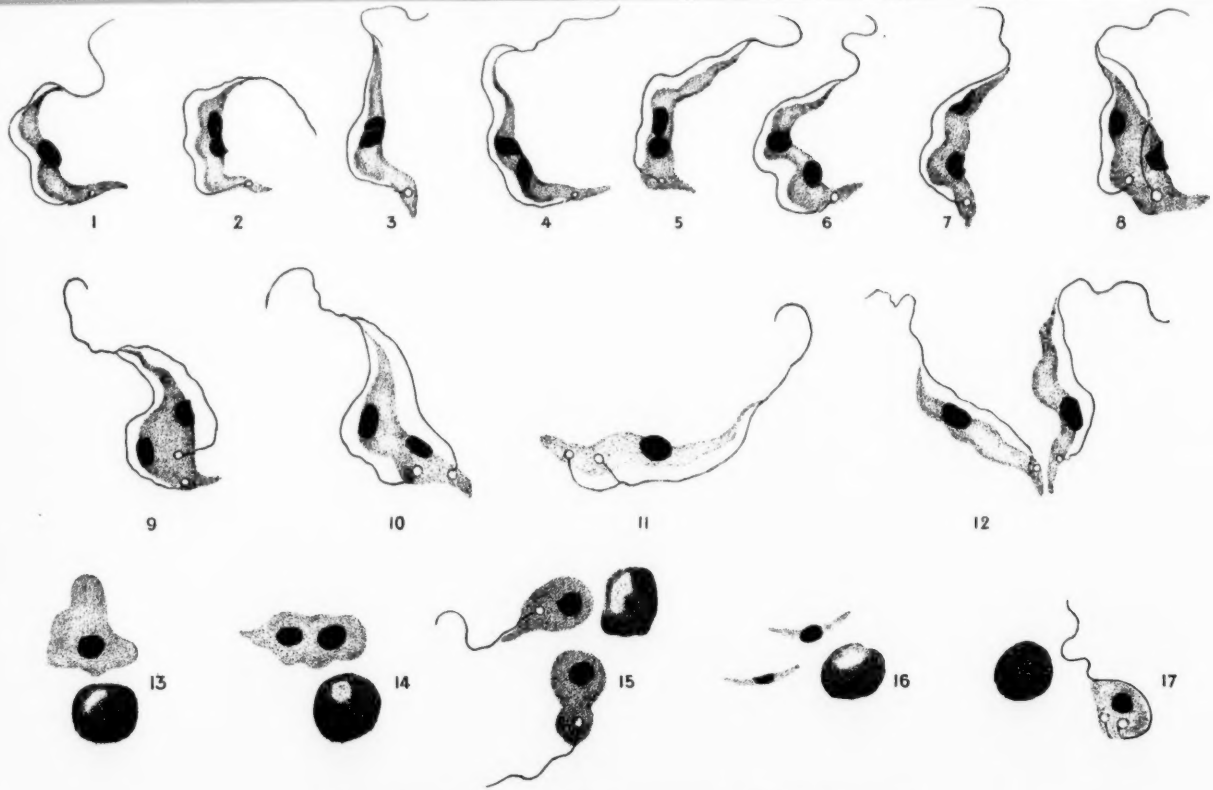
The inhabitants of infected districts consider that there is an allied form of disease to "Mal de Caderas" that is distinct from it at first, but afterwards develops into it, which they term "Mbae-aci-Poy" or "Mbae-aci-Pueu," meaning in the Guarani tongue, "The disease that lasts long." It is characterised only by a slow progressive anæmia, paresis not appearing for a long time, when the people say it is changed into "Mal de Caderas." I have, however, proved by experimental inoculation of the horse, monkey, water-pig, and rabbit, that it is nearly a form of the "Mal de Caderas," having found the trypanosoma in the blood of the control animals.

The trypanosoma that causes "Mal de Caderas" is long and filiform in shape, its length about three to four times the diameter of a red blood corpuscle, and breadth a quarter. In the middle is a very large nucleus, with a smaller one, "the centrosome," at one end, and along one of its borders is a delicate membrane marked by a fine undulating line. Their number varies with the length of time the disease has been in existence, being few at first, but increasing as the case advances. They are, however, rarely in proportion of one to four of the red corpuscles, and the only time I observed this was in the case of an eight months old foal. It is mobile, and in a hanging drop preparation its movements, like the lash of a whip, can be well seen. Its vitality outside the body, however, does not seem to be great, about five to eight hours.

The organism will take nearly all the ordinary stains; I have used a one per cent. watery solution of magenta, which stains it a deep red, but does not show up the details of the nucleus. If this is required it is necessary to treat the preparation previously with an aqueous solution of hematine. The cover-glass preparations are first treated for twelve hours with absolute alcohol, and then transferred to a five per cent. aqueous solution of bicarbonate of potash, in which it is left for three hours, and stain with the following:—

First Solution.

Hematine,	0·50	grs.
Ammonia alum,	5·	
Water,	100·	



Different stages of subdivision of the Trypanosoma of "Mal de Caderas."

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12—Parasites in different stages of division.
13, 14, 15, 16, and 17—Abnormal forms of Parasite.

Stained with hematine and magenta.

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Second Solution.

Magenta, ...	1	} mms.
Absolute alcohol, . .	10	
Water, ...	100	

1 minim of No. 2 is added to 5 cc. of No. 1.

By this method the nuclei and filament is stained violet, the protoplasm dark, and the enveloping membrane a light red, the centrosome remaining uncoloured, or only very slightly so.

The multiplication of the organism takes place within the body by division in the same way as described by MM. Laveran and Meonie in the case of the Nagana.[1]

There is a division of both the nucleus and centrosome, each portion adhering to the enveloping membrane, when a second flagellum develops, dividing the body in two. This division can take place transversely or longitudinally, and the young parasites may be very unequal in size. On post-mortem examination serous effusion is found in the peritoneal cavity, depending in quantity on the severity of the case. It contains flocculi of fibrin, and coagulates with heat, and the same applies to the pleura, pericardium, and joints, but in none have we ever found the parasite.

The kidneys are congested, particularly in the neighbourhood of the pyramids, but the pelvis and cortex are unaltered, though the capsule can be easily detached.

The spleen is enlarged, hard, dark in colour, and has a marbled appearance on section. The liver also is enlarged and congested.

In some cases there are isolated patches of lobular pneumonia, especially on the lower borders, also of hæmorrhage and emphysema, probably due to the dyspnœa that comes on just before death. The bronchial mucous membrane is deeply injected, and the tubes filled with a thick mucopurulent secretion, at times tinged with blood.

The heart is soft, dark coloured, with lymph adhering to the valves.

Beyond slight congestion of the pia mater the brain is normal, but the spinal canal is full of a gelatinous fluid, at times tinged with blood.

Mal de Caderas is easily produced experimentally not only in the horse, but most other mammifers, and though the leading symptoms are present in all cases and the organism in the blood the same, there are variations in different animals, monkeys, mice, dogs, and water-pigs appearing to be the most susceptible.

In the case of monkeys we found that a dose of 1 minim caused death in fifteen to twenty days, and in larger quantities, 10 to 15 minims, seven to ten days. Mice died in from ten to twelve days. In rabbits death does not take place for six weeks or two months, and there are never a large number of parasites in the blood. In these creatures there is œdema of the ear, and on pricking the swelling the parasite can be discovered in the serum. The dog is said to become infected through eating diseased carcases, but the domestic fowl is refractory.

MAL DE CADERAS IN PARAGUAY.

According to the inhabitants it was unknown prior to 1847, when it was brought into the country by the Brazilian army during the war of that

[1] Laveran and Meonie. Society of Biology, 29th March 1901.

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year, and became endemic in the northern part of the country on the Brazilian frontier. In the eastern provinces it appears to spread along the banks of the rivers, and, according to the inhabitants, the reason is the large numbers of water-pigs that are found there. At first sight it would look as if the disease was conveyed from one animal to another through the medium of some species of fly, like African "nagana," but as I have many times proved that the fencing in of an estate will prevent it, I reluctantly have to dismiss this theory, and at present I am unable to supply another to take its place.

At a meeting of the Central Veterinary Medical Society of France on November 27th, 1902, M. Nocard presented an important communication from M. Lignieres, Director of the Bacteriological Institute of Buenos Ayres, on "The South American Equine Trypanosomose of South America, known as 'Mal de Cadera.'"

M. Lignieres points out that fatal disease, which greatly resembles dourine, is due to a trypanosoma, that was discovered last year by Dr. Elmassian, Director of the Bacteriological Laboratory of Assumpcion, Paraguay. M. Lignieres confirms Dr. Elmassian's observations, and his communication, of which M. Nocard gave the outlines, gives a very complete study of the biology, which differs from any of the known trypanosoma. The communication will be published in one of the early bulletins of the Society.

A CONTRIBUTION TO THE ACTION OF CHLOROFORM ON DOGS.

BY HENRY TAYLOR, M.R.C.V.S., NEW VETERINARY COLLEGE, EDINBURGH.

Whether chloroform is or is not a perfectly safe anæsthetic for dogs has formed the subject of many controversies. A great many practitioners hold the view that chloroform is not a safe anæsthetic for dogs, and base their opinions on their own private experience with the drug, which has been unfortunate. On the other hand, others maintain that it is an efficient, nay, safe anæsthetic, but these latter generally add the proviso that it should be administered in a so-and-so manner, or with so-and-so precautions. Now there is undoubtedly a wrong and a right way of administering chloroform, and the difference in the manner of administration has to some extent accounted for the discrepancy in the results.

Chloroform is generally given with a view of saving life, but lately, as time and opportunity have offered (often, too, in deference to the owner's wishes), we have used chloroform instead of prussic acid for destroying dogs, and we have thus been able to glean some little further insight into its action on these animals. In administering it for their destruction, we have noted its varying effect upon dogs, and the effect of giving the chloroform vapour strong or weak. I have kept records of twenty cases, particulars of which follow. The dogs were brought to the College by their owners, and were of course an indiscriminate lot, not in any way prepared for anæsthesia; out of these twenty some were very fat, some had just been fed, one had heart disease, and many were old. We thus see that in some cases we should have judged the animals not to have been in a fit condition to withstand chloroform, and the animal did not, *e.g.*,

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No. 16, with heart disease; but, on the other hand, others which looked equally unfit subjects, withstood the chloroform for a long time, even with the apparatus giving the strong vapour, *e.g.*, No. 4, an eighteen-year-old pug, which if we remember rightly was also very fat. The time taken in each case and the amount of chloroform used to accomplish their destruction both vary between wide limits.

We must explain that we tried to be as expeditious as possible with every case, and gave the chloroform as fast as the bellows of each particular apparatus could. When the animals were once under the influence of the anæsthetic, the chloroform was given just as quickly and was so continued till death. They were not allowed to come round. We were thus doing the very exact opposite of what we do in clinical work when inducing and maintaining anæsthesia, or, to put it perhaps more plainly, we administered the chloroform in the very worst way as an anæsthetic.

In the subjoined table mention is made of two different kinds of apparatus; the first is described as that in which the air is passed *over* the

FIG. I.—Apparatus No. 1, in which air is blown over the chloroform.

chloroform, the second that in which the air is passed *through* the chloroform. The former is represented by Fig. I., the latter by Fig. II. In both cases a muzzle was used over the dog's head, which did not allow the

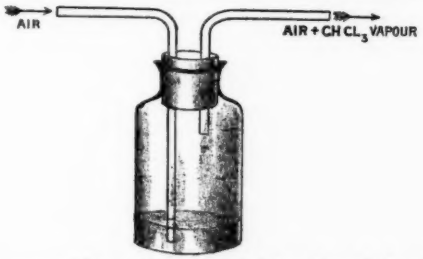


FIG. II.—Apparatus No. 2, in which air is blown through the chloroform.

animal to breathe any air but what had passed through the bottle. The air was blown over by means of a rubber bellows. The kind of chloroform used was chloroform manufactured from methyl alcohol, but which was guaranteed pure and equal in all respects to chloroform made from ethyl alcohol. However, in an operation I recommend that made from ethyl alcohol for safety.

If we look at the table, we shall find some rather interesting facts. Let us first take the amounts of chloroform required to accomplish the destruction of the dog. The lowest quantity used was in the case of No. 10 (a seventeen-year-old fat pug), where only one drachm was needed, and the highest quantity in the case of No. 9 (a fourteen-year-old spaniel), where twenty-two drachms were required. The average quantity lies between nine and ten drachms.

The length of time taken to produce anæsthesia does, on the contrary, not vary a great deal. In four cases it was rather long—nine, six, five and a half, and five minutes respectively—but all the others were about three minutes or under. It should be explained that by the term anæsthesia we mean here that the corneal reflex was abolished; now it is worth while noting as a practical fact that although the reflex movements produced by touching the cornea are wanting, and therefore at the same time the feeling of pain, that *all* movements are not abolished at this stage. Thus under this degree of anæsthesia we may get involuntary inco-ordinate movements, or twitchings of the limbs or head and neck. In some operations this degree of anæsthesia is sufficient, but in others again the proceedings are much interfered with. To take a good example, the extirpation of the eyeball. It is not by any means an easy task to get out an eyeball whilst the animal is tossing its head about, although it may be insensitive to pain, so in such cases we must get the animal into a state of *complete* anæsthesia, which is a stage further. We are unable to state the period intervening between the stages, *i.e.*, that stage of anæsthesia at which the corneal reflex is lost, and the complete stage at which all muscular movements (excepting the respiratory and cardiac ones) are abolished, but we know that it varied considerably. Some animals passed quickly from one to the other, whilst others took a long time.

Regarding the toxic effects of chloroform we see that in almost all the cases death took place by respiratory arrest. In only two cases did the heart stop before respiration, but in two others the stoppage was simultaneous. In four other cases respiration ceased for a time, then of its own accord recommenced (the heart beating meanwhile), then some time after both stopped simultaneously; in these latter cases the apparatus in use at the time was No. 2. In one case (No. 16) in which the heart stopped before respiration, the subject was suffering from very bad valvular endocarditis, both mitral and tricuspid valves having warty vegetations and being incompetent.

On auscultating the heart in those cases which suffered early on from a sudden temporary respiratory arrest, we often found that when respiration first ceased the heart was beating feebly and very slowly, about twenty-eight to thirty beats per minute. In these cases we may suppose that the respiratory centre in the medulla had become paralysed, and that either the cardiac centre had almost suffered a like fate, or that the vapour had had a strong inhibitory influence on the heart muscle itself. After a time the heart recovered from this depression and commenced to beat quicker and stronger again; respiration then in a little while recommenced.—See cases 17, 19, and 20.

As we previously remarked, two different styles of apparatus were used, and in some cases No. 1 (air over chloroform) was used for a time, and then superseded by No. 2 (air through chloroform). In No. 1 the chloroform vapour which the animal has to breathe is not nearly so strong

as in No. 2; thus in a given time, at the same rate of pumping air, the animal gets more chloroform with the latter than with the former.

If we look at the table we shall see that apparatus No. 2 causes death much quicker than apparatus No. 1, and in fact animals which had survived the latter apparatus for a comparatively long time quickly succumbed when the apparatus was changed to the former; dog No. 11 is an example of this, he resisted for twenty-two minutes No. 1 apparatus, but succumbed to No. 2 in one and a half minutes. Further, only one dog died whilst we were using No. 1 apparatus. This occurred in the short time of six minutes, but the subject was a pug dog seventeen years old, and I think it is generally conceded that this breed of dog does not stand chloroform well, not to mention the age. In all the other cases in using apparatus No. 1 death did not take place during the time it was used, and the length of time varied from twelve to fifty-eight and a half minutes, with an average of twenty-two and a half minutes, taking the whole lot. On the other hand, using apparatus No. 2, we find that four animals died in two and a half minutes or under, and the average length of time taken by animals which *succumbed* to this style of apparatus was just over thirteen minutes.

From these facts I think no one will contest the conclusions that apparatus No. 1 affords a much safer method of administering chloroform than apparatus No. 2. If further proof be required, by looking at cases Nos. 17, 19, and 20, we see that although these took respectively seven and a half, twenty-nine and a half, and seventeen minutes before they died, yet respiration stopped *once* after respectively three, two and a half, and two and a quarter minutes administration. In each case respiration commenced again of its own accord without our using artificial means, in three, six, and six and three quarter minutes respectively.

With regard also to giving the chloroform vapour strong, the strength will depend to some extent on the quantity in the different bottles. As a practical fact, we found that if 1 oz. be placed in No. 2 apparatus the vapour is so strong that the dog not only resents it and struggles violently, but respiration quickly ceases, and may or may not recommence. In nearly all the cases with both styles of apparatus the quantity in the bottle at the time of commencing administration was 4 drachms. In the case of small dogs we made it 3 drachms.

With regard to the strength of the vapour of chloroform in the air which the animal breathes, we found a great difference in our figures from the only ones which we could find for comparison, viz., those given in Professor Hobday's Canine and Feline Surgery. In the latter we find that it says, "With chloroform the proportion admitted for a large dog need not in the majority of cases be more than 1 in 1000, and for very young animals and those of the smaller and more delicate breeds, 1 in 3000 or 1 in 4000 parts of air is not too small a percentage."

The volume delivered by each compression of the rubber bulb in our apparatus was, with No. 1 apparatus (which was not quite air-tight) 73 cc., with No. 2, 82 cc., and with No. 1 apparatus 1 volume of chloroform was taken up by 15,660 volumes of air, with No. 2, 1 volume with 5,480 volumes of air. This shows that nearly three times as much chloroform is taken up when the air is blown through it.

None of the above cases were complicated by surgical operations, otherwise the figures and results might have been different. In my hands

the minor surgical operations, such as excision of small tumours, reducing fractures, &c. do not seem to have much effect on the animal when under chloroform, but when the abdominal cavity has had to be opened and the intestines or uterus to be manipulated, then collapse has pretty frequently quite suddenly occurred, the animal first of all becoming deathly cold.

From these twenty cases, as well as from the ordinary clinical anæsthetic cases, I have arrived at the following conclusions:—

Conclusions.

(1.) Chloroform to be a safe anæsthetic for dogs must be given very dilute. If an apparatus like No. 1 is used, with a closed muzzle, the quantity in the bottle should be about 3 drachms.

(2.) Apparatus No. 2 is not safe, as the vapour is administered too strong.

(3.) Death from chloroform (in patients not suffering from heart disease) in 83·3 per cent. of the cases is from respiratory arrest, in 11·1 per cent. from simultaneous respiratory and cardiac arrest, and in 5·5 per cent. from cardiac arrest.

(4.) Chloroform has a varying toxic effect on dogs.

(5.) Some individuals possess a peculiar idiosyncrasy towards it which causes them to suddenly collapse.

Subject.	Length of time it took for animal to get under (corneal reflex absent).	Amount of Chloroform used.	Length of time occupied with apparatus in which air passed over the Chloroform.	Length of time occupied with apparatus in which air passed through the Chloroform.	Mode of Death.
1. Collie dog, healthy,	1½ min.	8 drs.	—	12 min.	Respiratory arrest. Heart beat for 2 minutes 25 seconds longer.
2. Terrier, healthy, .	2 min. 15 sec.	—	—	2 min. 15 sec.	Respiration stopped suddenly. Heart could not be felt beating just after respiration ceased.
3. Dachshund, healthy,	2 min.	7½ drs.	17½ min.	4½ min.	Respiratory arrest. Heart beat for 3½ minutes longer.
4. Pug, healthy, 18 years old.	2 min.	—	—	15 min. 15 sec.	Respiratory arrest.
5. Fox terrier, aged, an epileptic subject, and rather debilitated.	2 min. 10 sec.	—	—	2 min. 10 sec.	Sudden respiratory arrest. The pulse could not be felt when breathing ceased, so probably heart respiration stopped simultaneously.
6. Collie, healthy, .	1 min. 45 sec.	—	—	4½ min.	Cessation of respiration, and circulation practically synchronous.
7. Fox terrier, healthy, aged.	1 min. 20 sec.	—	—	7½ min.	Respiration and circulation seemingly stopped synchronously after respiration had once stopped and recommenced.
8. Mongrel, healthy, .	3 min. 30 sec.	12½ drs.	37 min.	17 min.	Respiration stopped twice and then recommenced. Did not find out which finally stopped first in this case.
9. Spaniel, 14 years old,	5 min.	22 drs.	10 min.	38 min.	Respiratory arrest. Heart beat for 2 minutes longer.
10. Pug, fat, 17 years old,	—	1 dr.	6 min.	—	Sudden respiratory arrest. Heart beat for ½ minnte longer.
11. Terrier, aged, suffering from ascites.	2 min. 45 sec.	3 drs.	22 min.	1½ min.	Respiratory arrest. Heart beat for 1 minute longer.

Subject.	Length of time it took for animal to get under (corneal reflex absent).	Amount of Chloroform used.	Length of time occupied with apparatus in which air passed over the Chloroform.	Length of time occupied with apparatus in which air passed through the Chloroform.	Mode of Death.
12. Terrier, healthy, .	5½ min.	7 drs.	19 min.	8 min.	Respiratory arrest. Heart beat for 5 minutes longer.
13. Terrier, healthy, .	3½ min.	12½ drs.	58½ min.	—	After this length of time he was destroyed by prussic acid.
14. Terrier, young, healthy.	6 min.	9 drs.	17 min.	11 min.	Cardiac arrest. Respiratory arrest occurred 1 minute later.
15. Collie, fat, aged, .	9½ min.	12 drs.	12 min.	19 min.	Respiratory arrest. Heart beat for 1 minute longer.
16. Collie, suffering from bad heart disease.	2 min.	3½ drs.	—	2½ min.	Cardiac arrest. Respiratory arrest occurred ½ minute later.
17. Skye terrier, aged, healthy.	3 min.	7 drs.	19 min.	7½ min.	Respiratory arrest took place 3 minutes after using apparatus No. 2, recommenced again in 3 more minutes, and stopped again 1½ minutes after that. the heart beating in the meantime, and stopping practically simultaneously with respiration the last time.
18. Fox terrier, healthy,	2½ min.	7 drs.	—	16 min.	Respiratory arrest. Heart continued to beat for 2½ minutes longer.
19. Fox terrier, paralysed in hind quarters.	2½ min.	13 drs.	12½ min.	29½ min	Respiratory arrest took place 2½ minutes after using apparatus No. 2, recommenced in 6 minutes, stopped again in 1½ minutes, recommenced in 8½ minutes, and finally stopped in 10 more minutes. Chloroform had been given all this time. Heart continued to beat all this time, and stopped simultaneously with respiration.
20. Welsh terrier, mangy, otherwise healthy.	1½ min.	8½ drs.	—	17 min.	Respiratory arrest took place suddenly 2½ minutes after using apparatus No. 2, recommenced in 6½ minutes, stopped again in 5 more minutes, recommenced in 2 more minutes, and stopped simultaneously with the heart 1 minute later. Chloroform had been given practically all the time.

WHITE SCOUR AND LUNG DISEASE AMONG YOUNG CALVES IN IRELAND.[1]

BY MR. WARWICK, M.R.C.V.S., EDINBURGH.

(*Continued from page* 147.)

BACTERIOLOGY.

Inoculution produced abundant cultures of various microbes, no matter whether the material was taken from the umbilical clot, liver, spleen, or

[1] Read at a meeting of the Border Counties Veterinary Medical Society, on Friday, 28th November 1902.

from the blood of the heart. Thus were present the *Coli bacillus*, *Para coli*, *Para typhoid*, white and yellow staphylococci, streptococci, and several others. Among so many some difficulty was experienced in recognising the offender. Ultimately a subacute case comes to hand, showing distinct arthritis, and examination of the arthritic fluid showed a small microbe, staining with difficulty, to be present in abundance. This microbe Professor Nocard isolated and inoculated into the peritoneum of a guinea-pig and veins of a rabbit, and it caused death in a few hours. The autopsy revealed lesions of septicæmia similar to acute cases of white scour. A more careful examination of the material collected previously was made and the same organism was found both in the blood of the heart and umbilical clot, and in the same material from all following cases. On April 16th two calves were received; the one was born on the 15th of the same month, and came from a farm where white scour did not exist. The other, four weeks old, came from a farm where white scour prevailed, and it had been attacked with the disease and recovered. The young calf was inoculated by injecting 3 c.c. of a pure culture of pasteurella into the jugular vein; the other with 10 c.c. of the same culture. The former became very sick and showed the characteristic symptoms of white scour, with a temperature of 91° F., and died in twenty-eight hours. The autopsy revealed the characteristic lesions of white scour, except that of the umbilicus, which was absent.

Microscopical examination showed the pasteurella in almost pure culture in the blood of the heart and fluids of the serous cavities. The latter calf appeared to be a little dull, but soon became himself again, which shows that he had received some immunity from the former natural attack.

From Professor Nocard's previous experience of the pasteurella and the paralysing action of its toxin on the phagocytes, thereby allowing secondary infection to take place, together with other similar results which this experiment produced, that is, the natural disease in its most rapid form and lesions identical with those of acute white scour, throw some light on the pathogenesis.

Professor Nocard says, whatever be the mode of ingress of this specific microbe I am convinced that, in the great majority of cases, it penetrates by way of the umbilicus at the time of birth. It grows in the body and sets up a general septicæmic infection, from which the animal may succumb in less than twenty-four hours. If the animal resists the disease for a few days, the body, deprived of its means of defence by the action of the toxins, becomes the prey of numerous secondary infections proceeding from the intestines and lungs. If the sick calf resists the intestinal infection and recovers from white scour, the pulmonary infection continues its slow evolution and produces lung disease.

The organism which causes lung disease is identical with that which produces pseudo-farcinous ulcerative lymphangitis in the horse, and in sheep caseous broncho-pneumonia. In pus obtained from the lesions the bacilli occur as small, thick, round rods, with rounded extremities, free in the fluid of the specimens or enclosed within the cells. Sometimes they are arranged in parallel lines like the teeth of a comb, or they may be in linear series with short points, increasing in thickness until the final point, which is longer and club-shaped. Some are drawn out into shreds at the extremities and swollen in the centre, while others are like cocci bacilli.

It stains well with the Gram method. It is an aërobe and grows on all the ordinary media at a temperature of 95° to 100° F. The best medium is serum or defibrinated blood coagulated by heating. On horse serum the growth is white, while on ox serum it is more or less yellow coloured, and on coagulated blood grey. Milk is not coagulated. Microscopical examination of the pus from the abscesses in the lungs in all stages of the disease shows this bacillus to be present in abundance.

The pasteurella and lung disease bacillus are common faculative saprophytes, and live chiefly upon dead organic materials. They exist everywhere, and are very abundant in dunghills and scrapings from farm-yards and the floors of cow and calf sheds.

Owing to the erection and organisation of creameries in the south of Ireland of late years, an idea prevailed that the cause of the disease was to be sought therein. This idea is not tenable, because white scour existed before creameries were instituted. Not only that, but there are farms which are ravaged by white scour, where the calves do not receive creamery milk until they are three weeks old, and yet many of them die during the first three days of life.

By what channel does the pasteurella enter the body. It is possible that the milk, if it does not cause the disease, may serve as a vehicle for conveying the infection, particularly when the organisms are so numerously present in the floor of the byres. Bacteriological and experimental study made on samples of milk gave negative results as far as the presence of the pasteurella is concerned. Further, a calf was allowed to suck a cow for four days whose mammary gland had received an injection of virulent pasteurella culture, without any ill effects. Again, a calf twelve hours old was given two litres of milk with 700 c.c. of a virulent pasteurella culture added, and had only a little temporary diarrhœa and fever on the following day. From this we may say that infection by way of the alimentary tract, if not impossible, is very improbable.

Can it be inoculated through the respiratory channel? The following experiment goes a long way to prove the negative. A calf four days old was made to inhale 30 c.c. of virulent pasteurella culture diluted with an equal amount of water, and no ill effects whatever were noticed. The constant presence of the umbilical lesion and that of the umbilical vessels shows that it is by this route that the organism enters.

When does infection occur? It is possible that infection may take place *in utero*, or at the moment of birth, during the passage of the fœtus through the vagina, the mucous membrane of which is always polluted by various microbes, or it may not occur until after birth, when the ruptured cord comes in contact with the excreta on the floor.

Intra-uterine infection does not occur as a blood-stream infection from mother to fœtus, as seems proved by the following experiment. On June 28th two cows due to calve were purchased from the north of Ireland, where white scour is unknown. On the following day, at ten A.M., these two cows received an intravenous injection of a virulent pasteurella culture. No. 1 cow received 2 c.c. and No. 2 cow 6 c.c. The latter died twenty-eight hours afterwards, and the autopsy revealed hæmorrhagic septicæmia. The blood of the heart and exudations of the pleura and pericardiums gave pure cultures of the pasteurella, but no fœtus, fully developed, had completely escaped infection. The pasteurella had been unable to pass the placental filtre, shown by the inoculation of the blood, &c. on various

media with negative results. Cow No. 1 suffered very little, and soon resumed her normal condition and gave birth to two fine bull calves on July 1st, which afterwards showed no signs of white scour.

It does seem probable, if the vaginal mucous membrane be always polluted with various microbes, that infection may occur during parturition. The following experiment proved this. A cow due to calve was bought from a farm ravaged by white scour and placed in a special box, which had previously been occupied by a horse. She calved a fine calf on July 6th at eight P.M., and the calf was found dead on the morning of the 9th. The autopsy showed the usual lesions of white scour, with the umbilicus, umbilical vessels, urachus, and bladder covered with suffusions of blood, and the pasteurella in abundance.

The last hypothesis is the most reasonable, and no doubt by far the greater majority of calves are infected immediately after birth.

PROPHYLACTIC TREATMENT.

(1.) Render the vaginal mucous membrane aseptic and wash the posterior parts of the cow with some strong antiseptic previous to parturition.

(2.) Receive the calf on a clean bed of straw, and ligature the umbilical cord as soon as possible. Apply some antiseptic sufficiently strong to destroy all organisms present, and afterwards seal it up against the entrance of others.

(3.) Place the calf in a well disinfected shed, with plenty of good clean litter, and pay attention to the diet.

The results of this prophylactic treatment were rather disappointing in Ireland only. In England, Scotland, France, and Germany it has been very effectual. On several occasions my attention has been called to certain farms in the north of England where it was impossible to rear calves year after year, yet when this treatment was applied the disease was practically eradicated in the course of a few months. After giving this treatment an extensive trial in Ireland, and satisfied as to its inefficacy, through the secretary of the Department I was given a free hand to try what remedies I thought necessary. It at first appeared to me that the antiseptics applied to the umbilicus were either too weak or possessed of very little destructive action upon this particular class of organisms, and that the sealing materials might possibly be at fault. In order to convince myself on these two points I applied very strong solutions of carbolic acid and corrosive sublimate, and sealed the navel with a compound of tar, pitch, and Jeyes' fluid; the results of which were as disappointing as the treatment recommended by Professor Nocard. I am quite convinced that the organism in many cases under my observation did not gain entrance at the umbilicus after birth, and still the umbilical lesions were present at the autopsy. I had noted previously the unhealthy appearance of the fœtal membranes and fluids discharged at and after parturition from cows on farms ravaged by white scour.

The attendants, though not very intelligent, had noticed that when the membranes were abnormal the calves were almost certain to die of white scour. The information received was often of a doubtful character, but in districts where the disease was most prevalent any attendant or farmer could point out certain cows whose calves it was impossible to rear, and had died year after year from the prevailing malady. Together with

the fact that abortion exists to the extent of 20 per cent. in these counties where white scour is so rife, I came to the conclusion, and still maintain the same opinion, that it is possible for intra-uterine infection to occur.

Professor Nocard informs us that the vaginal mucous membrane is always polluted by various microbes, the pasteurella included. Now, is it not possible, owing to the emaciated and debilitated condition of the cows, that when parturition approaches the labour pains are slow, weak, and unable to produce the desired effect in the ordinary time, that the os uteri may remain dilated more or less for a period of two or three days previous to actual parturition taking place. This would allow the organisms to migrate forwards and infect the fœtal membranes, which in turn infect the fœtus by way of the umbilicus.

I don't wish to say that white scour is abortion, or that abortion is white scour, but as the latter exists in Ireland I think there is an intimate relation between the two diseases. I think it is not unreasonable to suggest that abortion may be caused by other saprophytic organisms as well as by the bacillus of Bang.

IMMUNITY.

A calf which had recovered from a natural attack of white scour was inoculated by the injection of 10 c.c. pure pasteurella culture into its jugular vein, and another one which had never been exposed to infection received an injection of 3 c.c. of the same culture. The latter died in twenty-eight hours, whereas the former only developed white scour in its subacute form, viz., arthritis. This shows that the first attack of the disease, followed by recovery, confers a temporary immunity, and suggests a method of vaccination against white scour, but owing to the rapid evolution of the disease, since it often kills calves on the day of birth, it would be very difficult to carry out.

We have seen previously that its pasteurella does not itself pass the placental filtre, but this is not necessarily true of the soluble substances which give immunity. We might ask the question: Does a calf share in the immunity of the mother, recently recovered from a pasteurellic infection? The cow before mentioned resisted an intravenous injection of 2 c.c. pasteurellic culture, and afterwards calved two fine bull calves, which subsequently showed no signs of white scour. At the age of five days, calf No. 1 received an intravenous injection of 3 c.c. pasteurella culture, and two hours afterwards appeared to be very ill, lying stretched out, breathing 120 per minute, temperature 104° F. A few hours later the symptoms had distinctly abated and it looked much better, but subsequently developed arthritis and a little diarrhœa. Five days later this calf was killed, and the autopsy showed the umbilicus, umbilical vessels, and urachus, together with the abdominal organs, to be normal, but the lungs were the seat of commencing catarrhal pneumonia, and preparations of the tissue showed the presence of the lung disease bacillus. The affected joints contained the pasteurella in pure culture. There is little doubt that this calf was possessed of great resisting power against the action of the pasteurella. It was only six days old, and only developed arthritis, which is a subacute form of the disease. A calf six weeks old, bought from a non-infected district, received a similar dose of the same culture, and died in twenty hours from the septicæmic form. This experiment proves that the calf does participate in the partial immunity of the mother, and that this mode of vaccination would doubtless prove a success were the immunity complete.

PROPHYLAXIS.

The prophylactic treatment recommended by Professor Nocard is as follows :—

1. Provide the cows that are about to calve with dry and clean bedding, and keep it in good condition until after the calf is born.

2. When the cow shows signs of calving, the vulva, the anus, and the perineum should be disinfected with a warm 2 per cent. of lysol in rain water. The vagina should also be washed by injecting a considerable quantity of the same solution with a syringe.

3. Whenever possible, the calf should be received upon a piece of clean cloth, or at least upon a thick bed of clean fresh straw, unsoiled by urine and fæces.

4. The cord should be tied immediately after birth with a ligature of twine which has been kept in the lysol solution : the cord then should be cut below the ligature.

5. The portion of the cord still attached, as well as the umbilicus, should be dressed with the following solution by means of a brush :

Rain water, . . .	1 litre.
Iodine, . . .	2 grams.
Iodide of potass, . .	4 „

6. The disinfecting of the umbilicus and cord should be completed by dressing them with another brush dipped in the following solution :

Methylated spirit, . .	1 litre.
Iodine, . . .	2 grams.

7. The operation is finished after this spirit has evaporated by painting upon the cord and umbilicus a thick layer of collodion and iodine (1 per cent.) applied with a brush. When the collodion is dry the calf may be left to the care of its mother.

Since this treatment proved unsuccessful, I think the following may be added with advantage :—

1. Better housing and feeding of in-calf cows and calves. When the parturition season approaches the cows should receive a liberal allowance of cake or meal, in addition to the subsistence diet.

2. A good, well disinfected box should be set aside for calving purposes alone, and thoroughly disinfected after each case of parturition. The cow and calf sheds to be thoroughly cleaned and the floor well scraped, and some strong disinfectant applied prior to the calving season and repeated when necessary.

3. Fœtal membranes and litter soiled by the discharges to be destroyed by fire.

4. All cows after calving to be injected twice weekly with a 2 per cent. solution of carbolic acid, until œstrum appears, to render the vagina and uterus aseptic. An alkaline solution may be injected on the day previous to expected œstrum to neutralise the acidity of the womb, and thereby prevent sterility.

5. The bull to receive an injection of the same solution after the service of each cow.

6. The cow should not be served if there is any discharge of septic materials. In such a case the injection should be continued.

This added to Professor Nocard's treatment I think ought to prove successful in stamping out not only lung disease and white scour, but abortion.

Mr. WARWICK, referring to swelling of the navel after ligature, said in 99 cases out of 100 it was due to absorption of septic material drawing the phagocytes towards the seat of infection; or it occurred in cases where the umbilicus had not been sufficiently stretched, and the cords of the vessels not being raptured in a proper manner there might be an effusion of blood. He had found it necessary once or twice to ligature and seal up afresh. In the application of antiseptics to the navel he had applied pure carbolic acid several times, and it did no harm. It coagulated the albumen in the tissues, and rendered the remains of the umbilical cord firm and hard, and impossible for germs to gain an entrance, then seal it up with pitch tar and creolin. He mentioned a farm which had been ravaged with white scour for twenty-five years. On that farm a particular cow never reared a calf. The first calf died of white scour, and the second was aborted at the end of five months. The third died of white scour, and the fourth was aborted at the seventh month. The cow was bulled again at the first opportunity, and he was present when she calved the fifth time. She was a bit deceptive, and kept them watching for two or three days. During that time she was syringed with two per cent. solution of lysol. When she calved the cord was ligatured before it was broken. The calf was carried into the house and laid before the kitchen fire on a clean mat. The cord was dressed every three hours with pure carbolic acid, and rapidly sealed with pitch and tar. Next morning the calf was taken into the orchard and laid on the grass, where cows had never been before. At the end of thirty hours it died, and a post-mortem revealed lesions of acute white scour, with distinct lesions of umbilicus. How the germ gained entrance into the calf he could not tell. He thought that Professor Nocard had succeeded in finding out the cause and the greater part of the treatment. On some farms in the district he had treated for white scour where they could scarcely rear a calf before. They only applied ordinary treatment. In Ireland there were particular farms where they could not cure by Professor Nocard's treatment. He had the organisms of the pasteurella of white scour, lung disease, redwater in cattle, redwater in dog, and one or two more if the members cared to see them.—(Applause.)

These were afterwards inspected with much interest by the members.

The PRESIDENT then mentioned a disease which was very common in his district amongst calves a few days or a week old, and was known as navel-ill. Calves affected with this complaint suddenly developed serious symptoms of illness with great prostration, and many died in a few hours if not properly attended to. The navel was invariably found to be thickened and inflamed, and if the calf lived more than twenty-four hours after the first symptoms were noticed white scour set in. The most curious part of this disease is the fact that it is so amenable to treatment. Even calves that seem to be all but dead when properly treated soon get well again. The treatment consists of laying the navel well open with a cross section, and then applying freely an antiseptic, preferably lig. ferri perchlor.

Mr. WARWICK said this was a form of white scour in which the cocci became localised.

Mr. STEEL said he could not think that this navel disease was associated

with white scour. He described his treatment of thick navel, dissecting round about and relieving it with his finger, taking away the diseased part, then dressing the navel with carbolic oil. He had never lost one since he adopted this treatment.

In reply to Mr. LINDSAY, Mr. WARWICK said the white scour in this part of the country was the same as that in Ireland, but in a less acute form.

WHITE SCOUR IN IRISH CALVES.

THE *Cork Constitution* of March 4th has as its first editorial article the following references to Professor Nocard and the Irish Board of Agriculture's work in connection with the above disease, from which it would seem that the results of the recent investigations are not proving as successful as were expected :—

"The Department of Agriculture has issued a leaflet dealing with the prevention of white scour in calves. In so far as this publication urges upon farmers the great importance of cleanliness in cow-sheds, and more especially in calf-houses, and the need which exists for the frequent use of disinfectants in these farm buildings, it is not without its value, and if the hints given upon these points are paid attention to, the general result, we doubt not, will be found to well repay any expense and trouble that the following of these detailed instructions may involve. But those who read the leaflet in the hope of finding therein an effectual remedy for white scour in calves will, we fear, lay down the document with a sigh of disappointment. This disease, which has for some years been causing such a ruinous and alarming mortality among Irish calves, is not, of course, a newly discovered malady. It was not, however, until the introduction and extension of the creamery system that its ravages grew to such proportions as to cause so much disquietude among Irish cattle-breeders. Separated milk is an article which quickly decomposes, and the average farm servant, we need scarcely say, does not exercise a very nice discrimination when feeding this creamery refuse to cattle, young and old, with the result that the farmer's losses in calf mortality have continued to increase, while even butchers complain that the bones of cattle and pigs fed upon this separated milk are so brittle as to be almost rotten. The Department of Agriculture, however, will not hear a word said against creameries, the spread of which is owing so very much to the patronage of this Government Department. Professor Nocard was a year ago brought over specially from France to investigate the cause of white scour, and to suggest a remedy. Professor Nocard, with the aid of a number of lesser professional lights, carried on his investigations in a laboratory specially provided to facilitate his researches. He reported that the disease was occasioned by a germ entering the blood of the calf through the navel at the time of calving, and he prescribed as a remedy scrupulous cleanliness and an unsparing use of disinfectants. Whereupon the Department smilingly said, 'We told you so.' The broad fact, however, remains, that this disease was comparatively rare until the spread of creameries, though we suppose there is not a member of the Department's professional staff who will assert that Irish farmers were in pre-creamery days greater sticklers for cleanliness, or pinned their faith more to disinfectants than they do now. Another fact which has a very

curious bearing upon this subject is that white scour is most prevalent where the creameries are most numerous, and that the disease has, in fact, followed in the track of creamery extension. We were in hopes that Professor Nocard would have been able to prescribe an effectual remedy, and had he done so we would have found it our duty to recommend the Department to establish in connection with every creamery a sanatorium for the curative treatment of calves suffering from white scour. But the French professor has left the Irish farmer pretty much to his own devices so far as remedies go, though the Department seems to think the result of his investigation is not wholly fruitless. In the leaflet under notice the Department tells us that a few centres where the mortality had been excessive were selected, and into each of these a person sufficiently skilled to direct operations and to secure a fair trial for M. Nocard's treatment was sent. The result is set forth, and must, we should think, have proved very disappointing indeed. In Bansha 22 calves were treated under the Nocard method at birth by a skilled Departmental agent, and of these 7 died of white scour. In Feenagh 16 were so treated, of which 6 died. In Murroe 2 died out of 17 treated. In Newcastle West 8 died out of 20. In Liscarrol 15 died out of 22, and in Bunratty, the only place where much encouragement was experienced, 2 died out of 49. Side by side with these statistics we have the result given in the same districts of calves treated by their owners, whether in accordance with the Nocard method or by the employment of such aids as their own intelligence and experience suggested is not explained. The result, however, does not greatly differ. Of 38 treated 18 died. It is no wonder that the Department should confess that the results, as indicated by these figures, 'are far from satisfactory.' As will be seen by a report published elsewhere, the Department has now taken over the management of the Munster Dairy School and Agricultural Institute, one of the few technical institutions in the country which has been carrying on a most valuable work successfully by means of local effort. But the revolutionary Department could not leave well enough alone, and withdrew from the Board of Governors all powers of management, and insisted upon their acting in the capacity of a purely Advisory Board, with the result that the Governors were forced to resign their trust. And, following their example, the Ladies' Committee, who had been carrying on a highly useful work in imparting a knowledge of plain cooking and general domestic economy, have followed their example. Mr. Gill, who presided at yesterday's function, availed of the opportunity to indulge in some jibes and smart witticisms at the expense of both, when he and the Department he represents might have used the opportunity more wisely in helping to restore an order of things which would continue to benefit the agricultural community and the country's chief industry."

A SCOTTISH FARMER ON AGRICULTURAL AFFAIRS.

On Friday, 13th March, a Meeting of the East Lothian Farmers' Club was held in the George Hotel, Haddington, when Mr. James Hope, Eastbarns, gave an address on "Legislation as affecting Agriculture."

In the course of his address Mr. Hope said that when he was asked to read a paper before the Club he had taken agricultural legislation as his

text, because all through his fifty-seven years of practical farming he had taken a deep interest in that subject, and had served on two Royal Agricultural Commissions, both of which had led up to legislation, which had been of great benefit to the agricultural industry. He referred at some length to the potato blight in 1846, which resulted in the repeal of the Corn Laws. In this connection he noted incidentally that, although he had been farming on his own account for fifty-seven years, and his rent all that time had been over £4000 per annum, or at the rate of £4 : 10s. per acre, he had never received a single shilling of rent abatement in any one year, with the exception of the disastrous year of 1846. Proceeding to deal with the Diseases of Animals Act (1896), Mr. Hope discussed the Canadian cattle question at considerable length. As one who strongly approved of free trade in the importation of store stock and everything else, he gave it as his deliberate opinion that the agitation for the reintroduction of Canadian stores was utterly hopeless, and he strongly advised that breeders and feeders should join hands in demanding that the stock importation trade should be converted into a dead meat trade over all. Reverting to the Finance Act of 1890, by which what was called the "whisky money," amounting to something like a quarter of a million pounds sterling per annum, was thrown at the heads of the Burgh and County Councils for technical (including agricultural) education. Mr. Hope gave it as his decided opinion that a vast proportion of the money expended every year since then on agricultural education had been as good as wasted. Agricultural colleges had been founded, but many of the men who held the best paid posts as teachers of agricultural science were men who had been dead failures as farmers themselves. Agricultural lecturers had been sent out all over the country, but sometimes the lecturers found themselves without an audience. In one case in that district the lecturer had absolutely no audience at all, and in another case in the same district no one turned up but the lecturer and himself, and he had to go out and get some loafers bribed with a glass of whisky each to come in and hear the lecture. Besides, when a student went through a full college course and came out as a full-fledged B.Sc. or N.D.A., he never settled down as a farmer, but wanted away to be a professor of agriculture or a factor. He showed, from the Board of Agriculture's report that the endless experiments with manures, on which thousands of pounds were expended every year, had led to the discovery of no new facts, while in many cases they had proved utterly misleading. He strongly held that the course of instruction given in the rural schools was not of the right kind at all, as it was not suited for fitting the rural children for rural life and work, but, on the contrary, it was calculated to instil into their minds a distaste for rural work. Some enterprising publishers had now brought out some excellent and nicely illustrated agricultural "Readers," and if these Readers were used as text-books in rural schools in place of the usual string of travellers' tales and biographies of Lipton, Carnegie, and a few men who had been phenomenally successful, it would be much better for all concerned, and the pupils in the rural schools would be taught to take an intelligent interest in rural life and work.

THE VETERINARY MEDICAL ASSOCIATION OF IRELAND.

PRESIDENTIAL ADDRESS.[1]

BY C. ALLEN, F.R.C.V.S., DUBLIN.

GENTLEMEN—In thanking you for electing me as your President for a second year of office, I wish to express to you my feeling, but I cannot find words to appropriately convey my appreciation of the honour you have conferred on me; however, in accepting the favour I am not forgetful of the responsibility, and I assure you I shall endeavour to fill the office to the best of my humble ability, and feel confident that, with the aid of such an able staff as our Council is composed of, the task allotted to me will in the ensuing year be one of ease and pleasure, as it has been in the past. I sincerely hope that at the end of this year we may be able to report on the prosperity of the Association—as we can of the year just ended—and the credit of such satisfactory results must be given to the combined efforts of the Council.

The balance-sheet shows our healthy condition financially. Last year—that is, on December 21st, 1901—there were sixty-seven members on the roll; in the year 1902, fifteen more have been elected, and we have just now added five more.

We anticipate, now that each member is supplied with a full report of the meetings, thereby furnishing the information to members who cannot attend the meetings, and the other benefits which have been added and are derived from becoming a member of the Association, will greatly increase our numbers; in fact it should be considered culpable neglect of our individual interest not to join it. A brief *resumé* of our transactions during the past year, in my opinion, will convince the most sceptical of the necessity of and the advantages to be derived from the Association.

Our members have contributed at our quarterly meetings valuable papers on most interesting subjects; for instance, Mr. J. A. Beckett on "Azoturia," Professor Mettam on "Some phases of the Tuberculosis Question." We also had under our consideration a large number of specimens. Mr. Hedley exhibited a fractured navicular bone and a specimen of nodular disease of sheep's intestine; Mr. M'Kenny a fractured first rib, a fractured pelvis, and some obstetric instruments; Professor Mettam, the uterus of a pig with testes attached, and a tumour on a cat's paw; Mr. Beckett, a fractured radius, and several X-ray photographs of fractures; Mr. Freeman and Professor Mettam, tubercles taken from horse; Mr. Winter, piece of bone removed from occipital region, portion of pedal bone removed in case of quittor, photo of legs of horse with knees crossing, necrosis of pedal and navicular bone, intestinal calculi, portion of inferior maxilla removed from brood mare, portion of nasal inferior maxillary bone, section of foot showing result of laminitis, canon bone of thoroughbred with repair of fracture; and I showed you a specimen of a fractured hock. All of these were very fine specimens, and the history of the cases and discussions relative thereto were of much scientific and practical interest.

But added to the foregoing business transacted at the general meetings, we also had many meetings of your Council. The following is a brief synopsis of the principal transactions dealt with by it. We subscribed

[1] Delivered at the Annual General Meeting of the Association held in Dublin on 29th January 1903.

£10 to the "Williams Memorial Fund," and a similar amount to the "John Freeman Memorial Fund." (2.) The consideration of a means whereby we might obtain for the members an abatement of their insurance premiums. This has not been concluded. (3.) Selection of candidates to be elected as members of Council of the Royal College of Veterinary Surgeons. (4.) Suggestions submitted to the Turf Club and National Hunt Steeplechase Committee *re* the appointment of veterinary surgeons to attend professionally on their behalf at each race meeting; also where practicable their having a horse ambulance supplied. (5.) The obtaining of exemption of veterinarians from attending on juries. (6.) Suspension of Rule 8 *re* fines. (7.) Printing and distribution to each member a copy of a report of each meeting of our Association. (8.) The action taken by our Association *re* the Army Veterinary Department. (9.) Communications *re* Victoria Benevolent Fund. (10.) Means whereby we may check or prevent lectures on veterinary matters being delivered which are of delusionary interest to the uninitiated, and are prejudicial to the welfare of the public and the profession. (11.) The complaints of practising veterinarians as to those holding Government appointments practising privately. (12.) Report of Defence Association. (13.) Submitted to the Council of the Royal College of Veterinary Surgeons an advertising announcement which appeared in the sporting paper *The Field* on the 15th November of last year, and was signed as sent to said paper by the Secretary of the Camden Town Veterinary College for publication, and therefore assumedly by the authority of the Principal of the College, and thus he should be held responsible. On this matter I am pleased to learn from the report of the last Council Meeting of the Royal College of Veterinary Surgeons which appeared in *The Veterinary Record* of the 24th inst., that although "the Registration Committee considered that the Principal had nothing to do with it," yet they "suggested that the attention of the Governors should be drawn to it, and that advertisements of veterinary practice should not be published in the case of a College which would not be allowed in the case of a private practitioner."

Such minor matters as fixing date of meetings and other duties have been attended to, but they are deemed unnecessary to report to you.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

PRESIDENTIAL ADDRESS.[1]

MR. THOMPSON said that since they had seen fit to make him their choice, he thought it his duty not only to themselves, but also to the noble profession to which they were proud to belong, to submit to their decision by accepting the office. He would make an effort to occupy the position to the best of his ability, for if their profession was to advance and keep pace with other professions, each individual member, in whatever sphere he might be, and however little he might be able to do, must do his part, since it was not so much by the efforts of the few brilliant individuals as by the combined work of the many that sound and satisfactory progress was made. That was his justification of appearing before them that afternoon as their President. Of course, in speaking of the veterinary profession his

[1] Delivered at the Annual Meeting of the Yorkshire Veterinary Medical Society on Friday, January 30th, 1903.

thoughts wandered back to the time when he began to practise, now some twenty-five years ago, and it was only natural that he should draw a comparison between their position then and the position in which they found themselves to-day. In those days he must say the treatment they adopted was to a great extent empirical. The staple drugs were much the same as those in general use at the present time, but their knowledge of them was based more upon the results of their own practical experience than upon the rational acquaintance with their therapeutical actions, which they found to be the rule in current practice. A few new surgical operations had been added to the list—a few neurectomies, and one or two tenotomies—but as to their utility it was not for him to discuss there.

But, above all, their knowledge of bacteriology, a science which was then in its infancy, had increased and developed to such an extent that it had now come to take a foremost place in their curriculum. Medical men were no longer averse to utilising the information which might be gathered from the study of the pathological and bacteriological affections of the lower animals; and the general public was gradually recognising the fact that there existed a close relationship between some of the diseases of man and of the lower animals. The result was that their calling was being looked upon, not only as of import to owners of animals, but also to the welfare of the community. Bacteriology had been the means of creating such subjects as preventive medicine, hygiene, meat and milk inspection, and an important outcome had been the provision of responsible and remunerative posts in the way of the various inspectorships offered now to members of the veterinary profession. It was his belief that the number of such posts would be greatly increased, and that there was a great future in store for the coming generation in that direction. In order to obtain a licence to practise, veterinary students of to-day had to pass through a most protracted course of study, and he thought he could safely say, without any fear of contradiction, that when they left College they had as comprehensive a grasp of the subjects which they professed as the students of any other profession which could be named. Moreover, the standard set by the Royal College of Surgeons is by no means a low one, for in addition to the pass percentage of marks being extremely high, viz., 45 per cent., every subject in the whole curriculum is a failing subject. When they remembered that an intending practitioner of human medicine might obtain the diplomas of the Royal Colleges of Physicians and Surgeons by taking each of the examinations subsequent to the preliminary examination piecemeal, he thought, if only through the fact that their men were compelled to pass in all the subjects prescribed for each examination at one sitting, they might safely estimate their standard at 30 per cent. higher. The only matter which he regretted in this connection was the retrograde step recently taken by the Council of the Royal College of Veterinary Surgeons with regard to the preliminary examination, which was now undoubtedly lowered. He regretted this step, because he believed that if they were to keep up with the times and with other professions they must raise their standard according to the increased facilities which were presented to students. For instance, it would be absurd in these days, when efficient and inexpensive education, both scientific and classical, was carried to the door of almost every boy, to expect only the same standard as that demanded from the country boy who, not many years ago, not uncommonly had to travel perhaps half a dozen miles in order to obtain an

hour's instruction in a subject which he intended taking even in its elementary stage at South Kensington.

We are no longer without men who are capable of discussing matters scientific with not only the great men of this country, but also with the greatest which other countries can produce. What better illustration have we of this than to have numbered amongst the three masters selected to address the whole of the London Congress on Tuberculosis, Principal M'Fadyean, of the Royal Veterinary College, whom we are proud to be able to reckon as one of us? What more illustrious company could he have been in than that of Dr. Koch and Professor Brouardel? Socially, we have also gone ahead. As a profession we are but young, and although we might consider we are not receiving the recognition in some quarters—the Army Veterinary Department—to which we are justly entitled, we can still point to a few Knights and a fair number of Justices of the Peace, &c., whose names are to be found on our Register, and we are not without hope of adding to them an M.P. or two. Honours have certainly not been showered upon us, and we look in vain in the periodical lists for names which we justly expect amongst those who have rendered their country service, and find instead professional bacon-curers and such-like. But our non-recognition in some quarters, I believe, is not to be attributed to a desire on the part of others to ignore us, so much as to our own neglect in pushing forward our cause. What more flagrant case of coolly submitting to a miscarriage of justice to a profession could we have had than the appointment of Colonel Long to the post of Superintendent of Veterinary Hospitals in South Africa? We have another such example in the Spanton case. Our Council are without doubt doing what they can in the matter, but the marvel to me is, why those whose duty to their profession it was—those of us in authority in the Army Veterinary Department—did not make a firm stand, sternly resent such an unmitigated insult. Of the support of the British public they could have rested assured. Instead of that they sit tight, calmly consoled by the security of their own position. What we require in positions where there is frequently much professional status at stake are fighting, progressive men who will vigorously oppose any attempt to infringe the rights of their professional brethren, whether such infringement affects their own personal position or not. But notwithstanding the little drawbacks mentioned (the remedies for which I believe rest in the hands of members of our own profession), it is my candid opinion that we are not the "back number" that some of the despondent members would have us believe, but that our position compared with other professions is most satisfactory. Of millionaires we have none, I admit, but on the other hand the number of our unemployed, and our members suffering from the strains of poverty is insignificant, and this I consider by far the better test.

In conclusion the President appealed for the support of every member of the Association during his year of office. He sincerely hoped that every member who could spare the time for the preparation would read a paper, but those who found themselves too busily occupied for that could at least relate accounts of clinical cases which had come under their observation, whereby they might all be interested and instructed. He thanked them for having elected him President of the Society, and hoped that the present year would prove one of the most successful in the history of the Association.—(Applause.)

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

PRESIDENTIAL ADDRESS.[1]

BY MR. R. HUGHES, M.R.C.V.S., OSWESTRY.

GENTLEMEN—My first duty, and a very pleasing one, is to acknowledge the honour you have conferred upon me in electing me as your President for the ensuing year. I can assure you this proof of your esteem and confidence I appreciate most highly, and with your support and the co-operation of my fellow-officers—of which I feel assured—I hope the Society will maintain the important and progressive position which it holds in the profession.

Some of my predecessors in this honourable office—and let me remind you many of them have held eminent positions in the profession—have delivered highly instructive Presidential addresses. That is a height to which I cannot attain, indeed I wish the custom were a relic of the past, but I am pleased to acknowledge my indebtedness to this Society, and to emphasise the inestimable value of our meetings as stimuli to further study and to the advancement of our knowledge. Such associations as ours bring members into closer contact, induce an exchange of opinions on various subjects, and foster better feelings between neighbouring practitioners, and must ultimately prove a great power for the uplifting of our profession.

From noting the reports of our Council we conclude that nothing of a controversial character engages its attention at present, and therefore our profession may be considered in a healthy condition, thanks to our Council for the deep interest taken in our welfare. Yet we could achieve greater progress if we only acted up to our motto and were more effectively banded together. I will only trespass on your patience by briefly mentioning two or three subjects. The first is the general education of those entering our profession, which is repeatedly brought before our Council. In this progressive age, when quite recently education has received so much attention, I do not think the standard is too high or exacting, because a Second Class College of Preceptors, or the Oxford and Cambridge Lower Certificates, cannot be considered too severe a test for a youth of average intelligence to attain before he is seventeen years of age. Loud are the utterances at times for raising the status of our profession, and to my mind a most helpful step towards that end is a liberal education. No doubt the object of sound education is to enlighten the understanding, cultivate the taste, form the manners and habits of youth, and especially fit them for usefulness in their future positions by preparing them for the battle of life, and we may venture to ask if intending members can be overcharged with this wholesome influence? The arguments against advancing educational tests are, that many desirable candidates may be prevented from entering our ranks, and that the flower of our profession have not been of those favoured with liberal educational advantages, and also the numerous instances of greatness achieved by self-taught men of indomitable energy and perseverance that have been conspicuous as leaders and pioneers in many walks in life, are no proof that the acceptance of ready-made opinions obtained at school destroy the original thinking power and resourcefulness of the mind.

[1] Delivered at the Annual Meeting of the Lancashire Veterinary Medical Association, Feb. 21st, 1903.

Still, I would remind you that I do not regard a liberal education as an all-powerful panacea for entering our profession; but a well-trained intellect, combined with natural aptitude and sound common sense, must be better able to take a deeper and more comprehensive grasp of the subjects involved in our curriculum and of the necessity yield better results.

Our members in the Army Veterinary Department have their grievances, and to my mind the War Office should blush with shame for allowing such disabilities to cling to a Department in the service of the Government, whose opinions and services, had they only been duly considered and rightly utilised during the recent war in South Africa, would have saved much of the lavish expenditure of national wealth. It is to be hoped the course taken by the Council of the Royal College of Veterinary Surgeons will have a salutary effect. I am sure we, in this Association, and the general body of the profession, extend to our fellow-members in the Army our sympathy and help, to enable them to claim a distinct rank, have full control of their subordinates, and to be placed on the same level as members of other professions, so that their requisitions will receive the same attention as those of combatant officers.

Direct representation of our profession in Parliament has been under discussion of late, and thanks to Mr. Fraser for moving in this matter. Considering that a great part of the nation's wealth consists of animals, we, as a trained body of men, should be represented in the Legislative Assembly of the nation. The Board of Agriculture is the appointed authority by Parliament to prevent and control contagious and infectious diseases of animals, and we have a fair knowledge by this of its wisdom and efficiency in the discharge of its duties, and there is no denying the fact that if greater knowledge of animal diseases entered into its administrative powers inestimable advantages would be the natural result. When questions and measures that concern the transmission of diseases from animals to man, the suppression of contagious animal diseases, and commercial intercourse with countries where such maladies exist, engage the attention of our legislature, can we truly estimate the value of an expert opinion expressed in the discussion thereon, such as a suitable member of our profession would be able to offer? This to my mind is an important channel whereby the veterinary profession can prove to the British public its true value and the important place it should occupy in preventive medicine and public health. If Parliamentary representation had been secured I believe the Board of Agriculture would long before this have adopted measures more calculated to arrest if not entirely suppress such diseases as Glanders, Rabies, Anthrax, Sheep-scab, and probably Swine-fever, in addition to Rinderpest, Foot-and-mouth disease, Pleuro-pneumonia, and other contagious maladies that are fortunately not present in our country.

As the field of human activity is enlarged and its demands commensurately increased we want to adapt ourselves to every path of progress within our province, and without the important aid of veterinary science preventive medicine and public health will not adequately fulfil their mission. Who but the veterinary surgeon with his professional training and scientific attainments, his daily contact with animals in health and disease, and his opportunities for making post-mortem examinations to verify his diagnosis, is better qualified to act as Meat and Dairy Inspector, and thereby greatly add to the efficiency and usefulness of all authorities whose functions are the protection of human life and the suppression of intercommunicable

diseases. In this respect the veterinary and medical officers of health should go hand in hand. The veterinary surgeon should be the acknowledged authority in veterinary hygiene, which is a special subject in our curriculum, also on hereditary disease and unsoundness, and without his services and wise counsel authorities appointed for the care and development of agriculture and stockbreeding, whose advanced knowledge and efficiency should be to enhance the stock-raising resources of our country, cannot wisely and faithfully discharge the duties delegated to them.

Deep interest is attached to the investigations of the Royal Commission on Tuberculosis, and if the important statements made and reiterated by the eminent authority Dr. Koch should be substantiated by its researches, the much-needed measures for the suppression of this scourge will have to be reconsidered and modified.

Canine distemper is to receive special attention, especially as to the value of the so-called preventives against it, and let us hope the Committee's investigations will add much new light upon the pathology and prophylaxis of this troublesome malady.

The laudable action taken by the sister profession to inquire into the source, nature, and prevention of cancer will receive our heartiest support, and help to enable them to obtain animals suffering from malignant growths, so as to make their researches a rich blessing to suffering humanity.

I now offer my sincere apology for not submitting an address more worthy of your acceptance. However feeble our attempts to improve our position in this age of scientific inquiry, let us unite to make the best use of our opportunities, to build substantially upon the solid foundation laid by our predecessors, so as to hand on our science to posterity amplified and enriched by our labours.

REPORT UPON TEXAS FEVER OR REDWATER IN RHODESIA.

BY CHARLES E. GRAY, M.R.C.V.S., CHIEF CATTLE INSPECTOR, RHODESIA; AND WILLIAM ROBERTSON, M.R.C.V.S., BACTERIOLOGIST TO VETERINARY DEPARTMENT, CAPE COLONY.

(*Continued from page* 142.)

"Out of several hundred cases in which the blood was microscopically examined, in twenty cases only was the typical double pyrosoma (alluded to by Smith and Kilbourne) met with, and then in conjunction with the bacillary and spherical stages. The parasites appear quite as numerous in coverslips from the peripheral circulation as in smears taken from the internal organs.

"Briefly the forms of the parasite met with in this epidemic may be classed as follows:—

"No. 1. *The typical pyrosoma, single or double*, and its modifications. (1) The willow leaf form; (2) the clove or pin forms; and (3) the form where the head of the pyrosoma is much distended seems vacuolated and does not take stain.

"No. 2. *The bacillary or rod forms*, two or more of these may approximate themselves in such a manner as to take the form of a ring

resembling one of the stages in the life history of the parasite of human malaria.

"No. 3. *The coccus or spherical form*, as many as *eleven* of these may occupy one red blood corpuscle (the size ranging from a pin point up to a spherical body occupying one-third of the space of a red blood corpuscle, clear in the centre, and taking the stain at four points in the margin). A very common appearance seen in blood films is two spherical bodies in each red blood corpuscle.

"Most of the forms or stages met with can be classed under these three heads except the form we have alluded to before, and which resembles a *short bipolar staining bacillus*. This stage may exist in a corpuscle alone or in conjunction with other stages of the parasite, such as the sphere or bacillary, is about half the diameter of a red corpuscle in length, and stains at each pole with methyline blue, for about one-third of its length.

"By careful focussing it can be seen that the stained ends are slightly club-shaped. That many of the rod-like forms are miniature or deformed pyrosoma we are certain, as various stages in their life-history can be followed out and traced in various specimens from quite a thin rod with the faintest possible distal thickening, through stages representing a pin or clove to the perfect pyrosoma.

"We do not state that these changes can be seen in one specimen, *i.e.*, we do not infer that the perfect pyriform *must* pass through the rod form in its life-history, but that these are miniature or rather deformed types of the *Pyrosoma bigiminum*. As a reason why so many imperfect or miniature forms of the organism are noticed during the present outbreak, it may be suggested that the high susceptibility of so many of the cattle brought into Rhodesia for re-stocking purposes may be taken to indicate that the blood of such animals is peculiarly suitable for the multiplication of the parasite. As a consequence this reproductive process goes on with such rapidity that toxic effects result before the organisms attain their full development and the parasites are somewhat altered in appearance, much as many other organisms are when grown artificially in specially favourable media.

"The types of parasite met with seem to have no direct connection with the clinical symptoms of hæmoglobinuria, nor the lesion in the respiratory organs.

"In the course of our investigation into this disease, we have made and examined an immense number of blood films, and are unable to confirm the statement that free parasites are very plentiful in the circulation, but we have generally found them so in the spleen, liver, and particularly the lymphatic glands, and a notable feature about the coccus form of the organism is, that when found free the coccus maintains the relative position in which they are found within the blood cells. This may indicate that they are united by a bond which does not take the ordinary stains used in Redwater diagnosis.

"*The Brain* has always yielded the causal parasite when examined, but we have not been able to find either lesions of Redwater or parasites in the fœtus when the mother has succumbed to the disease.

"*Liver.*—Microscopical smears from this organ reveal the presence of the parasite, and the infarcts are simply areas of necrosis, full of a bacillus which yields a pure culture on artificial media.

Cluster of Pyrosoma.—Intra and extra Corpuscles.

"The areas of necrosis in the liver resemble the lesion met with in cases of disseminated bacterial necrosis of that organ, and do not follow any particular course or seem restricted to any particular part of the lobule.

"The bacillus exists in pure culture, and in immense numbers, occurs as short rods, motile, and forms threads, no spore formation has been noticed. Stains with ordinary aniline dyes, decolourised by Gram's. Cultivation is *Ærobic* and *Anærobic.*

"*On Agar Agar*, a thick grey growth.

"*In Bouillon*, forms a cloud and renders media turbid.

"*In Milk*, coagulates media.

"*In Gelatine stab* grows along needle tract.

"From above tests we imagine the bacillus to be *B. coli communis*, a common inhabitant of the intestinal tract, and often found associated with diseased conditions and affections of the liver, when the vitality of that organ is diminished. As it is not possible to carry out complete bacteriological investigation in a field laboratory, this organism will be further investigated in the Veterinary Bacteriological Laboratory, Cape Town.

"*Kidney.*—Smears from this organ show the parasite present in the red blood corpuscles, generally in a spherical form, and it is common to find a number of affected corpuscles bound together (blood-casts).

"Sections show the infarcts to be germ free, and simply to consist of areas of non-bacterial necrosis, the glomeruli are the chief centres affected, there is much proliferation of the cells lining the tubule which contain casts, and in some cases there is a small-celled infiltration invading the infarcted spots.

"In section from an acute case where there are no infarcts, blood-casts are met with in the tubules, and an acute hæmorrhagic condition of the whole organ is frequently present.

"*Spleen.*—Smears from this organ show the parasite in all its various forms, free and in the corpuscles. Section shows an immense congestion of the organ, and a number of degenerated blood-cells.

"*Lung.*—Smears show parasites if blood corpuscles are present. On section, there is distention of the air sacs with a fibrinous exudate, and a slight small-celled infiltration of their walls. Section of the lung much resembles that organ in horse sickness.

"*Spinal Cord.*—On section the vessels are noticed to be filled with red blood corpuscles, containing the characteristic and causal parasite. On the accompanying drawings made from blood films, each field has been drawn separately and true to nature, and serve not only to demonstrate the stages and forms of the parasite met with, but also to percentage of red blood corpuscles invaded.

"As this work was entirely conducted in a field, laboratory microphotographs were an impossibility, and for illustrative purposes we have only been able to obtain drawings, which, though they may lack the precisions of a photo-micrograph, may be taken as fair representations of the conditions observed.

"METHODS OF STAINING.

"In microscopical examination of the films from the blood and smears from the organs of affected animals, the customary methods in regard to fixing and staining were employed. The films were air-dried, fixing by

immersion for two minutes in equal parts absolute alcohol and æther, dried, stained with eosin (5 per cent. in 75 per cent. alcohol), washed, counterstained in a watery solution methylene blue for fifteen minutes, dried and mounted.

"When a quick diagnosis was required, Loeffler's methyline blue was employed. A weak solution of gentian violet stains the organisms well, but such preparations fade with great rapidity.

"In the case of sections eosin and counterstaining with methylene blue gave good results. Cole's stain (eosin and hæmatoxylin) gave very indifferent results.

"INOCULATION.

"Inoculation against redwater, which has been practised in many localities with conspicuous success, has not so far given satisfaction here, on account of the intensity of type which the disease has assumed, and a somewhat parallel condition exists in Natal, where it is not found possible to protect imported stock coming from localities where the disease does not exist. If such imported animals are inoculated with immune blood in the ordinary way, they generally develop a virulent type of the disease and die, so virulent is the blood of immune native-born stock in the coast districts of Natal.

"Preventive inoculation against redwater is carried out by inoculating susceptible stock with a dose of from 3 to 5 cubic centimetres of freshly drawn blood taken from an animal immune to the disease, with a view to producing a mild attack of redwater, sufficient to protect such stock subsequently when exposed to veldt infection. This blood may be drawn from—

"1st.—An animal born on redwater infected veldt and which has run there all its life.

"2nd.—An animal which has had an attack of redwater at least three months previous to withdrawal of blood, and since run on infected veldt.

"3rd.—An animal which has had a dose of redwater blood from a recently salted redwater animal, and which, after inoculation, has had a severe rise of temperature in consequence.

"In the Colony the first is preferred, and here we consider the last will be the most suitable; but it must be borne in mind that the blood of a salted animal can, under certain conditions, kill clean susceptible stock, and in order to discover whether a certain natural or artificially rendered immune animal is a fit and proper subject from which to draw blood, it is necessary to test such blood by inoculating one or two clean animals before doing all the herd.

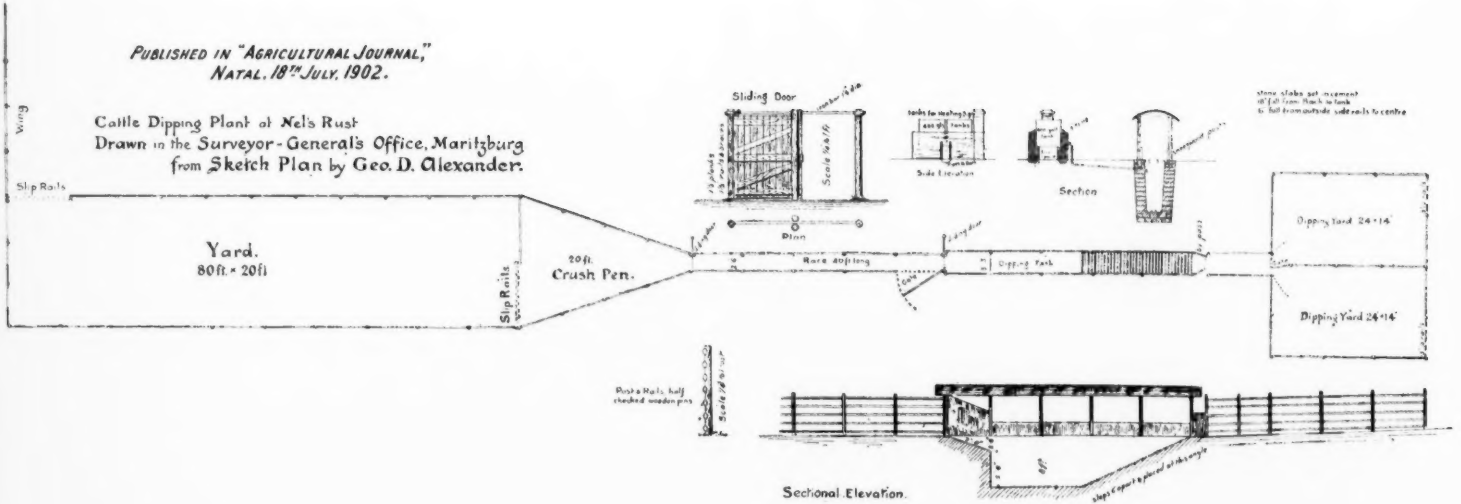
"The varied virulence of the blood of a salted animal is probably directly proportionate to the extent to which it is infested with redwater ticks, and as those increase in number, the blood, though at all times capable of infecting, may produce a fatal or severe attack in animals inoculated therewith. . . .

"DIPPING TANKS.

"These tanks are modelled upon the plan of those erected at the Santa Gertrude Ranche, Texas, with certain modifications adopted from the plans of dipping tanks published in the *Natal Agricultural Journal*, in order to enable warm arsenical dips to be used.

Published in "Agricultural Journal," Natal. 18th July. 1902.

Cattle Dipping Plant at Nel's Rust
Drawn in the Surveyor-General's Office, Maritzburg
from Sketch Plan by Geo. D. Alexander.



"Plans of the tanks are attached, with copy of instructions *re* dipping, and when these tanks are started the maintenance of cordons and quarantines will be abandoned, and cattle will be allowed to move freely without let or hindrance so long as they are dipped regularly every three weeks.

"The Queensland view on the value of dipping as a preventive of redwater is expressed in a letter recently received from the Chief Inspector of Stock, Queensland, who states that as a result of their more extended experience they now attach even more importance to dipping than they do to inoculation for the protection of stock from tick fever.

"With the inauguration of the dipping process it is proposed to carry out further inoculation experiments in three directions :—

"*First.*—An attempt will be made to reduce the virulence of our native-born immunised stock by keeping them tick free, in the hope that by doing so we may be able to use their blood safely for inoculation with reasonable hope of satisfactory results, if inoculated stock are subsequently protected from gross tick infection while undergoing immunisation and subsequent to recovery therefrom.

"*Second.*—A certain number of cattle salted to Colonial redwater will be brought up and used for inoculation purposes while they are kept clean by dipping, in the hope that the modified protection against redwater which will be conferred by their blood, may suffice to protect animals which are dipped against the more severe form of the disease prevalent here.

"*Third.*—An experiment of a similar character to No. 2 will be made with immune stock from Texas. It is hoped that in one of these directions we may find a way out of our present difficulty. . . .

The authors conclude their Report with this brief summary, but in the Appendix they give many records, &c., and we must refer our readers to the full Report :—

"Having stated in short language the history, clinical symptoms, post-mortem lesions of the disease, microscopical examination of affected tissues, and drawing attention to the conditions where the organism appears to differ from the description usually given by observers, and detail the result of protective inoculation, it is as well to state how, in our opinion, this epidemic of redwater differs from that disease as known to us in the Cape Colony and from the description of the workers in other countries in—

"1. The severity of the infection and mortality amongst infected herds.
"2. The fact that young animals (sucklings) bred and run on infected veldt contract the disease and die.
"3. The fact that one attack (and sometimes a second or third) of the disease does not confer any lengthy immunity.
"4. The severity of the post-mortem lesions.
"5. The presence of lung lesions in 30 per cent. and of kidney and lung lesions (infarcts) in the greater proportion of cases.
"6. The uncertainty of conferring immunity upon clean stock of the methods of inoculation as practised in the Cape Colony and America.

"From the experience gained during our work with the disease in Rhodesia and the perusal of the literature upon the subject by workers with Texas Fever in other countries, we are inclined to the belief in this case

that the disease has behaved as it always does when invading a fresh area, and as it did on the first invasion of the Cape Colony, Queensland, and many parts of America, *i.e.*, assumed the form of a severe epidemic, and has developed a virulence which will probably abate at a later stage.

Translations and Extracts.

PERITONITIS TREATED WITH ANTI-STREPTOCOCCUS SERUM.

BY M. BERGEON.

THE animal was a two-year-old cryptorchid, operated upon after due preparation for several days. The testicle was intra-abdominal, and found without any difficulty, excised, and an aseptic silk ligature applied to the cord. Although every precaution was taken, peritonitis supervened on the fourth day. The author employed daily injections of 20 to 30 cc. of antistreptococcus serum as well as the usual treatment, with good results, convalescence being prompt. He attributes the good results to the large dose he employed in both this and a former case.

(*Journal de Médecine Vétérinaire et de Zootechnie*, July 1902.)

ARSENIC AND CANTHARIDES OINTMENT IN THE TREATMENT OF WARTS.

BY M. PÉCUS.

THE author gives the following formula that he employs in two applications at several days' interval :—

Arsenious acid, . .	} 1 part.
Cantharides pulv. . .	
Resin, ...	2 parts.
Sweet oil, ...	} 5 parts.
Wax, ...	

The ingredients are melted and mixed. The surface of the tumour is dried, and the author recommends this being done by a light application of the actual cautery. The ointment is applied with a small spatula in a thin layer, and the cautery brought *near* to, but not in actual contact with the tumour so as to melt the ointment.

He quotes several cases, and states that this application can be safely used, even when the growths are connected with delicate structures, such as the eyelids.

(*Journal de Médecine Vétérinaire et de Zootechnie*, July 1902.)

USE OF ICHTARGAN IN VETERINARY PRACTICE.

BY M. BASS.

THE author has previously published an article in the *Revue Vétérinaire* of April 1901, page 234, on the therapeutic value of this substance, which is only a combination of ichthyol and silver soluble in water and glycerine. He now records some further observations, and recommends a 1 per cent. intravenous injection in cases of strangles and anasarca in the horse, and has used as much as 50 grammes daily for several days in succession without any inconvenience. He considers its bactericidal properties worthy of extended use in all infectious cases. It can also be given by the mouth in a mucilage, and externally dissolved in glycerine, and made up with vaseline or lanoline is useful in certain cases of mammitis, as well as in phlegmonous diseases in the horse.

(*Revue Vétérinaire*, July 1902.)

DIFFERENCE BETWEEN NAGANA AND MAL DE CADERA ESTABLISHED.

BY MM. LAVERAN AND MESNIL.

THE most widely extended diseases due to the trypanosoma are surra in India, nagana or tsetse fly in Africa, and mal de cadera in South America. These diseases have a striking resemblance to each other, and the organisms causing them are evidently very nearly related, and the question has arisen whether they were merely different local names for the same disease, or at all events only different varieties of the same.

The authors have been fortunate enough to be able to procure living specimens of the trypanosoma of nagana and mal de cadera, and to clearly demonstrate that they are totally different.

(*Acad. de Sciences*, 17th Nov. 1902.)

NAGANA IN THE SHARI DISTRICT, FRENCH SOUDAN.

BY DR. KERMORGANT.

THE Shari district is in French territory, nearly in the centre of Africa, to the south-east of Lake Tchad, into which the river of the same name flows. Surgeon-Major Mord, of the French Army, who visited that district, noticed the poor condition of the indigenous horses, donkeys, oxen, and sheep; goats only appearing to thrive. The duration of the attack sometimes was long, but in some cases the animals died in a few days. His attention was also called to the prevalence of the tsetse fly, which hung about the bushes of the Mimosa Polyacantha. Dr. Morel obtained some specimens of blood from a horse that was in a moribund condition, which he examined on his return to Brazzaville, and found contained the trypanosoma of nagana. Dr. La Moal, who assisted him in this, informed him that he had seen similar organisms in the blood of an official who had left the colony a short time previously.

Dutton has already found the trypanosoma in two cases in man, and Manson once.

(*Acad. de Médecine*, 15th Dec. 1902.)

DISEASES OF LAMBS.

Infectious Broncho-Pneumonia.

CLINICAL LECTURE BY M. MOUSSU, ALFORT VETERINARY SCHOOL, FEBRUARY 26TH, 1902.

Gentlemen—Amongst the diseases that attack suckling or very young lambs is a fatal one, viz., "Infectious Broncho-Pneumonia," which appears to be confined to these young creatures, as it does not seem to attack adults or suckling ewes.

It has been mentioned by M. Lafone, of Toulouse, who attributed it to sudden chills and vitiated air. It has a tendency to spread, and the two patients I show you have come out of a flock that has been decimated.

Symptoms.—Lambs of from six weeks to three months of age are the principal victims, the evolution of the disease being slow and obscure. They feed till they die, but the appetite gradually diminishes and condition is lost. Death usually takes place about the tenth or fifteenth day—earlier than that is exceptional.

The first symptoms observed are loss of spirits and appetite, which is shown by a disinclination to suck and a slight cough. These, in the ordinary course of events, should first come under the notice of the shepherd, but are likely to escape attention.

The lamb remains down, the cough increases and becomes painful, with a thick yellow discharge from the nose, which dries round it, the respirations are quickened, and the animal dies without showing any other very marked symptoms.

Despite the small size of the creature, it is easy by auscultation of the chest to detect the existence of mucous râles with a typical tubal sound that is localised in different places.

Diagnosis.—The clinical diagnosis should present no difficnlty, although I must inform you that our knowledge of the pathology of the disease is but slight.

It is certain that there is another cause for it than cold or the bad air of sheepcots, although M. Lafone attributed it to these, as I have seen a bad outbreak in model establishments, where every care was taken of the lambs, at a season when the weather was mild and warm.

It is necessary to look for other causes, and in the case of a disease that successively attacks the greater number of the lambs in a flock we may reasonably attribute it to a micro-organism contained in the nasal discharge or excrements, and which passes directly from the diseased to the healthy.

It would appear from the observations that I have made that the earlier cases are mild, but increase in virulence up to a certain point, when the mortality again declines, and as it passes through this phase in animals kept up in a fold without the possibility of fresh infections, it is only reasonable to suppose that at one period of its life-history the organism is latent. Furthermore, if on the outbreak of an epidemic all the healthy animals are isolated, it is rare that they are attacked. The outbreak may be mistaken for diseases due to contamination of the umbilicus, secondary pleurisy and pneumonia, infectious rheumatism, suppurative arthritis, and hepatitis, but in such, young animals from three to ten days old are generally attacked, whereas in this case it is not till they are about two months of age that there is any danger.

Until we know more about the pathology of this disease, I prefer from purely clinical observations to consider it due to an organism contained in the discharges from the respiratory organs, and, judging from the results that have arisen from the sanitary measures I have advised, I have reason to think that this view is right.

Lesions.—All the lesions on post-mortem examination will be found localised in the chest—localised pneumonia and pleurisy in patches, with adhesions and false membranes. These pleuritic patches correspond to those of the broncho-pneumonia, which in no way resemble those of lobar pneumonia, with red hepatisation caused by cold; and even in those cases where the entire lung is involved, it is due to coalition of the patches that originally divided from each other. The bronchii contain a large quantity of frothy mucus, and on section the implicated patch shows grey hepatisation.[1]

Prognosis.—This is bad. If prompt sanitary measures are not taken on the first outbreak the disease will spread, and in the course of a few weeks the whole of the lambs will be more or less affected, and if the flock is kept in the contaminated fold the mortality will be great, half or two-thirds of the cases proving fatal.

Treatment.—There is no specific treatment known; and furthermore, it will be easily understood how difficult individual care would be to carry out with young animals that are unweaned and hardly can eat.

Sanitary measures are, however, easily carried out, and in my experience are effective. The following are what I recommend. When the nature of the outbreak has been established for certain, I draw the whole flock, drafting those that are without doubt ill with those that are doubtful, either because they are dull and spiritless, coughing, or other cause, from the healthy, the fold emptied, and the healthy removed to another locality as far away as possible.

The building is thoroughly disinfected and cleaned, and the affected animals returned to it if it is impossible to accommodate them elsewhere. Salicylate of soda is given in the food or water, 1 gramme to the litre, when it may be reckoned that each will get 50 to 60 centigrammes daily. I also have the house sprayed morning and evening with a 2 per cent. solution of carbolic acid, which can be done easily with a vine sprayer. If a suspicious case should appear in the healthy lot, both the lamb and the ewe are at once removed to the original fold.

The fold in which the healthy part of the flock are placed is also sprayed, and if the weather is favourable they are let out daily, and by these simple precautions the progress of the disease is stopped. Frequently the whole of the isolated animals are saved, but on the other hand I have seen a huge mortality take place.

In my experience individual treatment and administration of medicines is a failure, and the above precautions are what I have found to be the most successful and economical.

In conclusion, I must point out that, judging from clinical observations, there appears to be a great resemblance between the broncho-

[1] Culture experiments with material from these inflammatory patches showed a bacillus that grew well in bouillon (rendering it turbid in twenty-four to thirty-six hours), also in peptonised broth. On gelatine, at the commencement, opalescent white colonies that afterwards became opaque. There was no growth on potatoes. The organism stained with gentian violet and phenic thionine, but not by Gram, but not being able to obtain any young lambs for inoculation I am unable to say if it is really specific.

pneumonia of lambs and the contagious pneumonia of young pigs; the circumstances under which they appear and the manner they spread appearing to be identical.

(*Recueil de Médecine Vétérinaire*, 15th Feb. 1903.)

USE OF COLLARGOL IN THE TREATMENT OF DIARRHŒA IN CALVES.

BY HEESA EVERS.

STAMPFL had to deal with an outbreak of diarrhœa in calves on a farm, the mortality from which amounted to 30 per cent. Having exhausted all ordinary treatment without success, he resolved to try Evers's, viz., the intravenous injection of 5 cc. of collargol in 5 grammes distilled water daily for three consecutive days, together with 1 gramme daily of itrol in sugar or mucilage, by the mouth.

After a trial the itrol was given up. The collargol did not cure those affected, but seemed to preserve the healthy; out of eighty-one animals treated seventy-nine remained healthy, the other two were cured after a certain time, whereas all the calves that were not were affected with diarrhœa and died. The author is of opinion that collargol is a prophylactic in diarrhœa in calves.

(*Thierärztliches Centralblatt*, 1902.)

TREATMENT OF LAMINITIS.

BY PROFESSOR L. HOFFMAN, STUTTGARD.

THE author commences by referring to Gutenäcker's definition of laminitis, viz.—"Diffused aseptic superficial pododermitis, chiefly implicating the toe and quarters, and leading to deformity of the hoof."

He also admits the predisposing causes given by Gutenäcker—faulty bearing, bad shoeing and defective horn, sprains and overwork, prolonged standing, infectious pneumonia, damaged forage, cold, congestion, parturition, abortion, and metastasis.

Hoffmann points out that he has been struck by the fact that although the causes are numerous the symptoms are always the same, and that there seems to be a predisposition for the full effects to centralise themselves at the anterior and lateral parts of the foot, which appear to be "places of predeliction," and that the manifestations of the disease here is "secondary," not primary.

The reason of this he considers is that the primary seat of disease is in the extensor muscles, and in particular by the extensor pedis and its tendon, which spreads out fan-shaped at its insertion into the pyramidal process of the os pedis, the "place of predeliction" of laminitis. Whether the cause is a vegetable poison (forage), animal poison (influenza), toxine (parturition or abortion), or infection (acute rheumatism) is, according to Hoffmann, immaterial, as the exciting cause in the foot is mechanical. The extensor muscle and tendon being in a morbid condition, the resulting pain causes

the horse to go on his heels, with the result that the laminæ are compressed by the wall at each step taken.

In support of his theory he mentions that in certain very acute cases necrosis of the insertion of the extensor tendon is seen, that general treatment gives better result than purely local, and that the symptoms are better explained by the muscular theory of origin than any other. He gives a series of illustrations taken from sections of feet from horses that have died from acute laminitis, showing hypertrophy of the inferior sesamoidian ligament, which he says is a lesion not sufficiently recognised.

Treatment—(*A.*) *Acute Laminitis.*—The present practice of general treatment—bleeding, purgatives, revulsives, and febrifuges—is applied without any concise reasons, but the author's theory throws another light on the matter. He recommends first bleeding to the extent of 4 to 6 quarts, followed by large and repeated doses of antifibrine and salicylic acid, with active purgatives such as eserine and arecoline, with diaphoretics, pilocarpine, and vapour baths. The patient should be put on laxative diet and warmly clothed. The affected limb should receive friction throughout its entire length with some revulsive such as ichthyol linament or Lugal's solution,[1] and linen bandages with spirit covered with flannel, the foot being placed in a hot poultice.

(*B.*) *Chronic Laminitis.*—Hoffmann for a considerable period has endeavoured to prevent atrophy of the sole by irritants and stimulants, even using pyro-puncture, but the results have not been encouraging. He also thinned the wall at the toe and quarters, but now has recourse to division by means of an electrically driven saw. The cuts are made parallel to the horn fibres, and are of course closer at the coronet than the rim of the wall. He casts the animal, administers an anesthetic, and uses strict antiseptic precautions both in the operation and after-dressing. The incision is carried through the hoof to the laminæ. He uses the usual means of shoeing in his cases.

(*Oesterr Monatsschrift für Thierheilkunde*, Jan. 1903.)

VETERINARY ESTABLISHMENT OF THE GERMAN ARMY.

Prussia.	17	inspecting veterinary surgeons (Corpseossarzte).
,,	1	do., attached to the School of Farriery at Berlin.
,,	146	first-class veterinary surgeons (Oberrossärzte).
,,	5	do., attached to Military Veterinary School, Berlin.
,,	4	do. do. School of Farriery, Berlin.
,,	27	do. do. Remount Depôts.
,,	201	veterinary surgeons (Rossarzte).
,,	6	do., attached to School of Farriery, Berlin.
,,	153	assistant veterinary surgeons (Unterrossarzte).

[1] Ichthyol liniment.—Ichthyol, 10 parts.
Alcohol, Ether, Distilled water, } aa. 30 parts.
Lugal's solution.—Iodine, 1
Iodide potassium, 1
Water or glycerine, 30 } parts.

Saxony.	2	inspecting	veterinary	surgeons.	
„	4	first-class	do.	do.	
„	3	do.	do.	do.	Remount Depôts.
„	18	veterinary	surgeons.		
„	2	do.	do.	School of Farriery, Dresden.	
„	16	assistant	veterinary	surgeons.	
Wurtemburg.	1	inspecting	veterinary	surgeon.	
„	8	first-class	do.	do.	
„	1	do.	do.	do.	Remount Depôt.
„	10	veterinary	surgeons.		
„	8	assistant	veterinary	surgeons.	

The numbers in the Bavarian army are not given.

(*Berliner Thier. Woch.*, 22nd Jan. 1903.)

MALIGNANT INFECTIOUS VAGINITIS IN THE COW.

BY DR. ELLINGER, OF NEUSTADT, SILESIA.

AFTER remarking on the plurality of the forms of malignant vaginitis, the author gives a review of the history of the complaint.

Ostertag and Raebiger, in speaking of catarrhal vaginitis, which caused great loss in Germany from abortion, metritis, peritonitis, and death, point out that vesicular vaginitis is the only one recognised by the sanitary police. They designate this affection as granular infectious vaginitis, and recommend the same measures being taken as with the vesicular form.

Dieckerhoff first drew attention to its malignant nature in 1891, proving that it was not only contagious from bovine to bovine, but from bovine to mare. The infection was located in the vagina, as proved by the ulceration seen after the first few days. The most prominent symptoms in addition to fever were frequent expulsive efforts, a blood-stained discharge from the part, and tumefaction of the vulva.

In 1892-93 two Italians, Baldoni and Tpinchera, noticed a diphtheritic infectious vaginitis in the cow, caused by connection with a bull suffering from extensive ulceration of the preputial opening. These cases yielded to treatment in ten to fifteen days by injections of 2 per cent. solution of sulphate of zinc and sub-nitrate of bismuth with insufflation of dermatal.

In 1894 Eber reported four cases of uterine catarrh with diphtheritic vaginitis. Harms, Eggeling, Siedamgrotzky, Sturm, and Kitt mention the same, but Bang first brought to notice the "bacillus of necrosis," and studied it in the numerous necrotic infections, both internal and external, that exist besides diphtheritic vaginitis.

De Bruin, in 1897, described a phlegmonous inflammation of the vulva and vagina, which he terms "contagious puerperal phlegmon," induced by contaminated hands, instruments, &c. during parturition, and which is almost always fatal. Treatment consisted of free incision of the diseased parts, as air is most antagonistic to the bacillus, with douches of a 2 to 3 per cent. solution of carbolic acid. De Bruin gives his experiences in two epidemics in 1892 and 1902. He only saw the disease in newly calved cows, and in all cases there was more or less intimate connection between the necrosis of the uterus and vagina, with necrosis of the digits (Panaris of Germany, Onychia).

Etiology.—The author altogether attributes it to the specific bacillus. He has seen it not only in the diphtheritic membrane, from the vaginal walls, and in the discharge, but also in the milk, sometimes as rods, at others as long filaments that stain with Gram and methyl blue; he also almost always found staphylococci and streptococci present. The bacillus resembles that of swine fever, and is frequently found in the intestine, but from some unknown cause it becomes virulent, and the result is the malady in question.

Litter and fæces are the chief vehicles for its transmission, but the hands of the operator, dirty instruments, and appliances are also to blame. It is not essential that the calving should have been difficult, as the author has seen attacks in cows that have calved without any assistance. The micrococci are stated to increase the virulence of the bacillus, but he is unable to say if the hæmorrhage seen in several fatal cases is attributable directly to them.

He calls attention to the co-existence of necrosis of the digit and vagina, and mentions a case of a cow that was near her time that had been placed in a stall previously occupied by one under treatment for necrosis of the digits that had been cured. Shortly after calving the animal was attacked with necrosis of the vagina. Professor Imminger has frequently noticed the same, and accounts for it that deep milkers have low powers of resistance to the bacillus.

Lastly, the author mentions the mortality amongst calves on contaminated farms through contamination of the umbilicus, and as a proof points out that if the cord is ligatured and proper antiseptic measures taken the disease disappears. This is also mentioned by Friedberger and Frohner, Traite de pathologie, 1892.

Symptoms.—These usually appear on the third day after calving, rarely later. There is marked swelling of the vulva, frequent straining and micturition, fever and loss of appetite. A number of circular ulcers appear on the vaginal mucous membrane that are very painful, and the discharge, which is at first serous, becomes a green colour, putrid, and with an infective smell. If the complication extends to the uterus the symptoms become accentuated, the fever rapidly increases, the patient becomes comatose and dies.

Lesions.—These are chiefly confined to the vagina, the mucous membrane of which is of a variable red colour. The extent of the ulceration is also variable, sometimes being continuous, the whole mucous membrane being implicated. If the uterus is involved the mucous membrane is affected in the same manner, and the organ is filled with a putrid blood-stained fluid loaded with débris of the necrosed membrane. In some cases there is subpleural and peritoneal ecchymosis, enteritis, hypertrophy of the spleen, and fatty degeneration of the kidneys, and in rare cases necrosis of the anus, rectum, urethra, and even the ureters and pelvis of the kidneys.

Diagnosis.—There should be no difficulty, the lesions can be seen if the lips of the vulva are separated, but if necessary a speculum can be introduced, and the vagina illuminated with a lamp and reflector. The disease should not be confused with necrosis resulting from mechanical injuries in difficult parturition. In these necrosis always follows the injury, and the membrane sloughs off in irregular flakes, whereas in infectious necrosis the morbid process is regular and uniform, and the membrane reddened from the beginning.

Prognosis and Development.—Prognosis is usually favourable, the crisis being reached at the seventh or eighth day. Convalescence lasts usually three or four weeks, but the animals lose condition greatly. Uterine complications almost invariably prove mortal.

Treatment.—Injections with a 2 per cent. solution of lysol or cresyl repeated several times daily and made come in contact with every part of the organ; the vagina should then be plugged with tampons saturated in Lugol's solution.[1]

Elbinger, however, recommends a solution of 1 to 3000 or 5000 of corrosive sublimate.

Septicæmia should be treated from the beginning with intravenous injection of a 1 to 15 solution of collargol, which in addition to its antiseptic properties assists the digestion, which is always affected. No cow about to calve should be placed in a building that has been occupied by an animal suffering from any form of necrosis or a person who has been attending such a case, or any one of a like nature be allowed to come in contact with her, and all instruments, appliances, &c. should be thoroughly disinfected.

The genitals and hind quarters of all cows about to calf should be carefully washed with a 2 per cent. solution of cresyl or lysol, and a douche of the same carefully given.

The flesh of animals affected with vaginal necrosis is unfit for consumption.

(*Berliner Thier. Wochenschrift*, 8th Jan. 1903).

INFECTIOUS CATARRHAL PNEUMONIA OF THE PIG.

BY DR. GREVE, SANITARY VETERINARY SURGEON, OLDENBOURG, HANOVER.

Dr. Greve was directed by the Chamber of Agriculture of Oldenbourg to investigate an outbreak of infectious cough amongst pigs in the Duchy. He bases his report on clinical observations, post-mortems, and information obtained from breeders.

The infectious cough is nothing but chronic catarrhal pneumonia, benign in pigs over eight to ten weeks old, but often malignant in those younger, especially if they are feeble and debilitated.

It is undoubtedly infectious, the contagium being found in the soil of the styes and drains, where it retains its virulence for a long time. The contagium can, however, be conveyed direct from one animal to another, and when it is once established in a piggery most of the animals will be attacked.

The period of incubation varies from ten to fourteen days, exceptionally it is twenty-four. The chief symptom is the cough, which at first is weak, but soon becomes loud, hoarse, and spasmodic, much resembling that of whooping-cough in children. The appetite is rarely lost, the respirations and temperature remaining normal. The paroxysms of coughing gradually diminish in frequency and violence, but rarely disappear altogether, although the pigs recover condition and appear to be healthy. It is rare for animals over eight weeks of age to die unless they are weak and debilitated, but the disease is the cause of great loss to breeders.

[1] Iodine 1, iodine of potassium 1, glycerine 30.

The post-mortem lesions are red patches of variable size, clearly defined, spread over the lungs chiefly at the borders. On section these patches are of a uniform colour, red or a dirty grey. There is a frothy mucus of a yellowish-white, or more rarely pink colour in the bronchii, the mucous membrane of which is of a greyish-white colour, injected and swollen, and if the case is an old one, the anterior lobes of the lung are collapsed. The pulmonary tissue is firm and dry on section, of a purple colour, and sinks in water.

In animals sent to the slaughter-house cavities are often found in the lungs of a size varying from a pea to a hen's egg. They are surrounded with a thick capsule, and contain purulent matter, the débris of the pulmonary tissue. These are cases that have been attacked when young but recovered.

The costal pleura is normal, but the pulmonary is implicated over the seat of the cavities if they are near the surface. The heart and pericardium are healthy; this latter may, however, be inflamed if it is in contact with the pulmonary pleura over a superficial cavity.

The bronchial glands are enlarged, but in the majority of cases the abdominal viscera are healthy.

On microscopical examination the bronchii and alveoli are seen to be partially or totally blocked up with round cells, and the bronchial mucous membrane tumefied and swollen.

The author considers the disease certainly due to a micro-organism, although he has not been able to isolate it. As regards diagnosis he calls attention to chronic pneumo-enteritis, with which it may be confounded on account of the similarity in the symptoms, and he mentions the following points on which they vary.

Chronic pulmonary catarrh usually runs a benign course, whereas pneumo-enteritis is usually fatal. It is the exception for pneumo-enteritis to develop gradually, and numerous acute cases are seen in an infected locality, which is never the case with pulmonary catarrh. In addition, in this latter tumefaction and redness of the skin is never seen, and from the commencement, except for the cough, the animals do not appear to be ill.

The post-mortem appearances are also different. The lungs only show the appearance of catarrhal broncho-pneumonia, very rarely cavities with pleurisy in the superimposed pleura. The author states that he has never seen the sharply defined yellow patches about the size of a hemp seed or the miliary centres of necrosis that are denoted by Schutz as being typical of pneumo-enteritis. The same applies to the caseous nodules in the lungs and bronchial ganglia, which Schutz has always seen in chronic pneumo-enteritis. Dr. Greve attributes the existence of cavities with their thick envelope and purulent contents to the accidental introduction of foreign bodies by the trachea in a fit of coughing, but he does not mention having actually found such on section. Also he states that he has never found lesions of general infection, or lesions in the intestine, neither the caseous deposits in the articulation that are so common in chronic pneumo-enteritis.

Treatment.—Prophylactic measures are primarily indicated and should be strictly carried out, especially with regard to young pigs newly purchased. Once the disease has manifested itself in a piggery, the healthy and diseased should be carefully separated, and the styes disinfected. The sick should be placed in warm dry well-ventilated styes,

the floor of which should be laid down with planks or moss litter. They should be well fed, and if possible, and the weather permits, turned out into a field several hours daily. As for internal treatment the author recommends creosote, especially creosotal.[1] He gives 10 parts creosotal, 140 brandy or spirit. Half a teaspoonful morning and evening in the food.

(*Deutsche Thierärztliche Wochenschrift*, No. 52. Dec. 27th, 1902.)

On 1st January 1901 there were 152 qualified Veterinary Surgeons in Norway. According to the census taken on 3rd December 1900 there were 172,879 horses, 948,736 bovines, 994,442 sheep, 214,295 goats, 164,610 pigs, and 93,765 reindeer in the country.

(*Recueil de Médecine Vétérinaire*, 15th Feb. 1903.)

Milan Veterinary School..—The number of students on the books for the present year is 131—viz., 29 first year, 24 second, 43 third, and 35 fourth.

(*Ibid.*)

TO OUR READERS.

Being fully aware that a thorough knowledge of all the diseases of Mammary Glands is of vital importance to human beings, we have obtained the plates and copyright of this admirable work, and Veterinary-Lieut.-Colonel Nunn has kindly undertaken its translation into English. We published the first portion in June 1902, and shall continue to publish it in monthly parts, and afterwards in book form.

DISEASES OF THE MAMMARY GLAND.

BY P. LEBLANC, LYONS VETERINARY COLLEGE—TRANSLATED BY VET.-LIEUT.-COLONEL NUNN, A.V.D., F.R.C.V.S., ETC.

(*Continued from page* 169.)

2. *Articulations.*—The joints involved are usually the knee, hock, elbow, stifle, and hip. In some cases they are hot, swollen, and painful, with an accumulation of synovia and flakes of fibrine in the capsule, and sometimes pus, when generally the skin ulcerates and an open joint is the result. In the chronic form the symptoms are not so well marked. There is considerable lameness, but the animal can move fairly well, there is not much accumulation of synovia, but there are intra-capsular granulations and the sheaths

[1] Creosotal: Creosote carbonate. A clear light brown viscous liquid, almost odourless and tasteless; insoluble in water, soluble in oils; is prepared from beech creosote, and contains the carbonates of guaiacal and creosal. Is said to disagree less than creosote, and has been used in tuberculosis. Breaks up internally into creosote and carbonic acid.—*The Extra Pharmacopœia.* (Martindale and Westcott.)

of the tendons are frequently involved. This form of the disease has been observed at Opoul by Bournay, and out of twenty-eight diseased animals seen by Hess and Guillebeau, sixteen had arthritis.

3. *The Eye.*—The lesions in the eye are keratitis, and the contagious form described by Felizet in goats is nothing but agalexia. Out of twenty-four cows seen by Hess and Gillebeau eleven had keratitis. The alterations in the cornea are more or less well marked, it becomes clouded, and the patient blind. Corneal abscess is not rare; it commences with a yellow point in the substance of the membrane, and if it points externally it will have a cicatrix, but if internally, there is danger of purlient contamination of the whole of the globe.

Pathology.—The articular lesions do not present any very peculiar appearances beyond those usually seen in arthritis. In the acute stage there is infiltration of the articular tissues and congestion of the synovial membrane. The character of the synovia, however, varies, and from this it has been concluded that there are three types of arthritis.

1. *Serous Inflammation*, characterised by an accumulation of red or yellow coloured serum in the articular cavity.
2. *Fibrinous Inflammation*, the capsule being filled with false membrane.
3. *Purulent Inflammation*, with pus in the cavity, and erosion of the articular cartilages.

Hess and Gillebeau have noticed the formation of abscesses in the surrounding muscles, and Rocca Marra endocarditis, but such must be considered as being exceptional.

Diagnosis.—In the majority of cases this is easy if the local symptoms that we have described are coexistent, but on the other hand they may not be, and in such there may be doubts. Arthritis may alone be present, but the fact of its assuming an enzootic form, will cause its true nature to be recognised.

Prognosis.—Is always bad; even in the most mild form there is loss of milk and loss of the mammæ, chronic arthritis and blindness. In the acute form the death rate has been estimated at 20 per cent.

Treatment.—The diseased should be carefully isolated from the rest of the flock, and the buildings disinfected. Local symptoms should be treated, but as a rule, on account of the trouble and expense, flockmasters prefer to slaughter those on which any profit can be made.

ACUTE MASTITIS.

Acute Mastitis in the Mare.

If we may judge from the lack of literature on the subject, this is a rare disease.

Vennerholm has only devoted a few lines to it in the article on the subject in Bayer and Frohner's Surgery.

The disease is seen during the period of lactation, generally a day or two before foaling, and usually half the udder is affected. Bermbach saw two mares whose foals had strangles attacked with acute mastitis.[1]

Schutz and Parent have found the *Streptococcus pyogenis* in the pus from the udder.[2]

Lucet has isolated from the milk of a mare suffering from mastitis an organism which he designates *Streptococcus mastitis equi*, which grows in long immobile chains. The organisms are oval or rounded, about 0μ.6 in diameter, and stain badly by Gram or Weigert's processes. They quickly lose the power of proliferation in artificial media. In cows' milk they form a firm yellow clot, do not liquefy gelatine, and are not pathogenic to the rabbit or guinea-pig. In the horse they cause abscesses when injected subcutaneously.[3]

Symptoms.—In the mare the disease is always dangerous, and is often the cause of death.

(*a*) *General Symptoms.*—Loss of appetite, acceleration of the respirations and pulse, which is strong and full. The mucous membranes are congested and blue, and the temperature from 102° to 104° F. Diener and Zundel note that attacks of colic are frequent.

(*b*) *Local Symptoms.*—The mammæ are increased in size, the skin covering is tense, shining, and hot. The whole region under the abdomen is tumefied, which extends to the umbilicus in front and up between the thighs. The teat corresponding to the affected quarter is hard, semi-erect, twice as large as natural, and gives exit to a dark blood-stained fluid, greenish pus, or serum, which may be of a reddish yellow or greenish grey colour, and very fœtid. —(Diener.)

There is great pain if the gland is handled. The animal moves with difficulty, which is specially noticeable if she tries to turn. One or several abscesses form and point, which should be opened.

The disease terminates with *induration*, *formation of an abscess*, and *gangrene* of the quarter.

Induration is seen in mild cases, and succeeds on the formation of an abscess, the whole gland being transformed into a hard, fibrous, incompressible mass larger than natural, and with total loss of powers of secretion.

Formation of abscess takes place in the majority of cases three times in three cases, Jacob;[4] one case, Parent; three times in four, Deiner;[5] one case, Kehm.[6]

[1] Bermbach. Berlin Thierartz. Wochens., No. 37.
[2] Parent. Journ. de Lyon, 1862.
[3] Lucet. Microbian Mammitis in the Mare. Bull. de la Soc. Centrale, 1893, page 97.
[4] Jacob. Practical Considerations on Engorgement of the Mammæ. Journ. de Lyon, 1847, page 364.
[5] Deiner. Mammitis in the Mare. The Veterinarian, LXVI., page 178.
[6] Kehm. Hollstandige Abcesderung der Mamma Zuchstute. Rep. s. 33, 22.

Gangrene of the quarter occurs with about the same frequency. In Parent's case four abscesses formed in the gland, besides others in different parts of the body. Twelve days after the commencement of the attack the gland sloughed off, the sequestrum weighing about 7 lbs.

The disease in the mare almost always runs a rapid course, and, according to Parent, in spite of its gravity, with care a cure may be expected about the fifteenth day. In Diener's cases a cure was effected in No. 1, twenty-one days; No. 2, fifteen days; No. 3, twenty-one days, and No. 4, ten days, but in all cases the function of the gland was destroyed.

Diagnosis.—The œdema present, and condition of the mammæ, with the alteration in the character of the milk, are the chief diagnostic symptoms.

Prognosis is always serious, as even with the most favourable ending the gland is lost, and a foster-mother has to be found for the foal, and in acute cases complications are to be feared.

Treatment.—The gland must be frequently fomented with an antiseptic, the milk drawn off, and the part lubricated with some anodyne ointment. Diener recommends camphor ointment 60, laurel oil 4, and green soap 10 parts.

If it can be applied and the patient will stand it, a linseed poultice with tincture of opium or poppy heads, kept in its place with a suspensory bandage, will have great effect in easing pain.

It is also good practice to give a purgative, for choice a saline, with laxative diet.

The abscess should be opened as soon as possible, and if necessary amputate the gland, which operation has been performed in France by Moncouet, Violet,[1] and Cadiot. In England by Scott,[2] and frequently in Germany in cases of Botryomycosa.

CATARRHAL MASTITIS IN THE COW.

Catarrhal mastitis in the cow is also known as mammary catarrh and galactopharitis, and consists of inflammation of the lactiferous ducts and canals. In the mammæ it is analogous to bronchitis in the lungs.

Formerly it was thought to be due to abnormal retention of milk, but it is now known that although this may render the parts susceptible, it is not *per se* a cause.

Kehrer has sealed up the teat of rabbits in milk with collodium without any ill result following.

Pierre Delbet has ligatured some of the canals in the bitch. Those left patent have carried off the milk, and there has been no inflammation.

Symptoms.—The disease may assume an acute or a subacute

[1] Violet. Communication to Professor Mathis.

[2] Scott. Amputation of the Mammary Gland in a Mare. Veterinarian, 1895, page 462.

form, and, as has been previously stated, mammary catarrh may assume very various forms, ranging from benign to parenchymatous mastitis.

Usually it is unaccompanied by any constitutional symptoms, the patient preserving her appetite, ruminating and appearing in good health, the temperature, pulse, and respiration remaining normal.[1]

The milk is always more or less altered, and consists of a white or pale yellow serum containing clots and sometimes tinged with blood. One or more quarters may be attacked, either simultaneously or successively.

The affected parts are hot, swollen, and painful. the teat pendulous. Sometimes the œdema is so great that the teats are partly hidden by it.

The inflammatory lesions are well marked in the tissues surrounding the sinus, but those parts of the gland that are not involved remain supple and normal, and the quarters continue to give milk in much the ordinary quantity.

Progress, Duration, and Termination.—The disease manifests itself rapidly, and if not severe may disappear in six to eight days, but if it is, may last for a couple of weeks. If it persists longer it is usually complicated with parenchymatous mastitis. Its terminations are various. If very benign it may disappear altogether without leaving any after-effects, but the quarter may to all appearances resume its normal condition without secreting milk until the next calving, when mastitis may again supervene. In severe cases the part may become atrophied or indurated.

Complications.—If neglected the case may run on into parenchymatous mastitis or abscess, and the thermometer will give valuable indications if it is not going on right. M. Mathis records one case in which acute pleuro-pneumonia supervened on catarrhal mastitis nineteen days after the commencement of the attack, with adhesion of the right lung to the diaphragm.[2]

Paraplegia has been mentioned by certain writers,[3] but this complication is open to doubt. Certain animals, if the udder is swollen and heavy, will not get up, others are unable to do so on account of some injury to the articulation.

Tobiassen[4] relates a case of paraplegia the fourth day after the commencement of an attack that lasted for three days. On the fourth the animal was able to get up. Ten days afterwards the milk was normal, and in a month all trace of induration of the gland had disappeared.

[1] Kroon describes a form of purulent catarrh attacking cows turned out to graze before they are dry, and he recommends resection or amputation of the teat, so as to allow of drainage of the pus from the sinus.

[2] Mathis. Catarrhal Mammitis in the Cow with fatal Pleuro-Pneumonia. Journ. de Lyon, 1897, page 454.

[3] Lucet. Recueil de méd. vét. 1889, page 423.

[4] Tobiassen. Ueber eine ligenthumliche. Form der euterentzundung der Kühe Manned. f. Drylœger, viii. 94, 51.

Villumsen records a similar case.[1] Perrussel also mentions a one of catarrhal mastitis which ended in forty-eight hours, when paraplegia supervened. In such cases the prognosis is variable, young robust animals recovering of their own accord, while aged and weak ones succumb.[1]

Arthritis and Synovitis are often present. Anderson mentions this fact.[2] In all probability they are of streptococcic origin.

Pathology.—The lesions are confined to the sinus and canals. There is swelling and degeneration of the mucous membrane, and degeneration of the epithelium, the loss of which is accompanied by submucous infiltration, dilation of the vessels, and exudation. There are granulations from the denuded membranes which fill up and block the lumen of the tubes, as before described, and the catarrh may become purulent.

Diagnosis.—The diagnosis is easy, there being tumefaction, tension, pain in the affected quarter, and alteration in the quality of the milk. In parenchymatous mastitis there are other systemic symptoms and fever. The whole organ is involved, the quarter being hard and wooden to the touch. The supra-mammary glands are also generally affected. None of these symptoms are present in simple mammary catarrh.

Prognosis.—If there are no complications the prognosis is generally good, but it should be remembered that there is always a possibility of a partial falling off or total loss of milk until the next calving.

Treatment.—It is prudent to look on every case of mastitis as being contagious, and the patient should be isolated from the rest of the herd in a separate cowhouse if possible. The stall should be disinfected and scraped, afterwards washed down with some disinfectant and left empty. If possible the diseased animals should not be attended to by the same persons who look after the healthy, but if this cannot be avoided, they should carefully wash their hands in some disinfectant. The udder should be emptied several times daily, if possible every two hours, and the milk received into a pail of boiling water or some disinfectant.

In simple catarrh antiseptic injections may be used, but in practice they are exceedingly troublesome to carry out, the same applying to astringents. In parts of France curdled milk used to the part with friction is looked on as a specific. Fomentations as hot as can be tolerated, with a small quantity of dilute mineral acid, appear in simple cases to act better than poultices, especially if combined with gentle massage.[3]

Lecoq recommends at the onset of the disease slightly astringent fomentations or an embrocation of sulphate of iron,

[1] Villumsen. Ein besondere Form der Euterentzundung. Maanedsk. f. Dryloeger, viii. page 243.
[2] Anderson. Enzoot Mastitis. Schwed Tidsk f. Vet. Méd. 1893, vol. xii. page 110.
[3] Schaak. Journal de Lyon 1865, page 50.

alum, and white of eggs, which last, according to him, has been of signal service.[1]

If the case is not seen in its earlier stages, or if the inflammation is not abated, the astringent should give place to an emollient, with poultices, steaming, or fomentation. Friction with an ointment containing opium, iodide of potassium, belladonna, and camphor are especially useful when there is difficulty in carrying out any other treatment. The patient is better kept in the house out of draughts, clothed up to prevent a chill, and provided with a good bed. The bowels must be regulated, and a small quantity of nitrate of potash may be given in gruel or the drinking water.

Clinical Papers.

FRACTURE OF THREE PASTERNS AT LONG INTERVALS IN THE SAME ANIMAL.

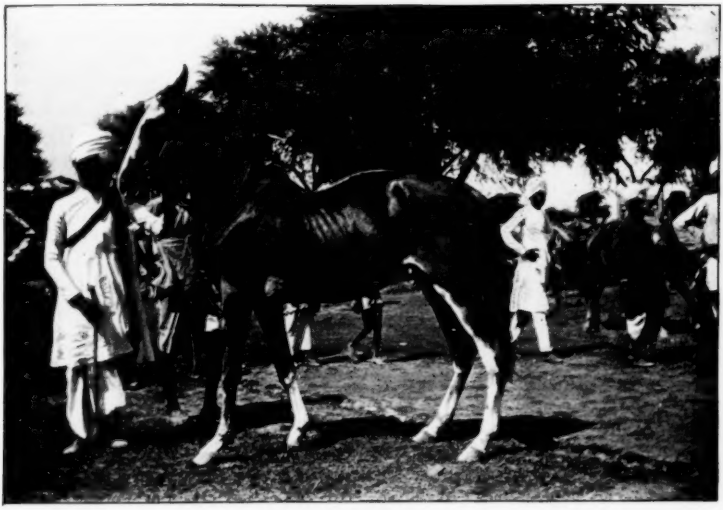
BY W. LOTHIAN, M.R.C.V.S., DUNS, N.B.

THE subject of these remarkable accidents was a twelve years' old half-bred harness mare. This mare had a reputation as an exceptionally sound and high-spirited animal, in fact so much so that in her younger days—she being restive in harness, and apt to kick—had to receive regular long and arduous work to keep her quiet. The first suffraginis to be fractured was the off hind one.—(Fig. I.) The lesion occurred when the mare was drawing a heavy load through deep snow in the winter of 1900. She became at once extremely lame, was got home with difficulty, and I saw her next morning and diagnosed a fracture. This was treated in the usual way, and made a good recovery, and returned to work. The next fracture was that of the near fore suffraginis.—(Fig. II.) This occurred when the mare was running out at grass in June of last year. The cause is unknown. The mare was found very lame one morning, and on examination I diagnosed (but with some uncertainty) a fracture. She was again treated for split pastern, and in September went back to work again quite sound. The third suffraginis (Fig. III.) that of the near hind, was fractured about the 14th of February of this year, and occurred during the night while the mare was in the stable, and the injury is supposed to have occurred either while she was rising or lying down. Be that as it may, she was found very lame in the morning. I again diagnosed a fracture, and proceeded to treat her, but after the lapse of a week she showed unfavourable symptoms, and was destroyed.

I have carefully examined all the bones of her body, and they seem perfectly normal. I may say that the mare never had any other lameness during her life. She was bred in this county. Her sire was a hackney, and her dam a carriage mare, and I have never heard any special complaint about any other of their progeny.

In conclusion, I beg to thank Principal Williams for kindly preparing the photographs for me.

[1] Lecoq. Paper on Mammitis. Mem. de la Soc. Vét. der Calvados.



SPINAL CURVATURE (see page 239).

FRACTURE OF THREE PASTERNS.

III. II. I.

III. II. I.

SPINAL CURVATURE.

BY E. W. OLIVER, M.R.C.V.S., INDIAN CIVIL VETERINARY DEPARTMENT, SUPERINTENDENT SOUTHERN PUNJAB, AMRITSER.

THE animal in question was a country-bred pony belonging to a native, who bred it. He stated that when born the back was perfectly straight, but very soon developed into the condition shown in the photograph, viz.—a distinct curvature of the dorsal and spinal vertebræ. The owner regularly rides the animal, which apparently suffers no ill effects.

OSTEO-POROSIS.

BY W. MOODIE, M.R.C.V.S., ROTHESAY.

THE case I propose describing is most uncommon among horses in Scotland, and still more uncommon in aged horses.

The subject was a nine-years-old hackney mare. In November 1902 the owner requested me to examine her, as she was losing condition and looking generally unthrifty.

I found her molar teeth to be irregular, and rasped them and gave her some stomachics, which seemed to do good, and I heard nothing more about her till January last, when I was again called in to see her.

I found her to have an enlargement of the face immediately above the first molar in the upper left jaw, furthermore, to have a fœtid gleet from the left nostril, and I therefore suspected caries of that tooth. An operation was advised, but the owner requested delay, as he had some urgent work for the mare to do.

She was fed on soft food and kept at work until the 3rd of February, when I again examined her. I found the first molar to be loose in the jaw, and easily removed it with a pair of forceps.

From this day the disease seemed to become much more active. By the middle of February a swelling appeared on the right side of the face in a similar position to that which had first appeared on the left side, the first molar also became quite loose. About this time excessive hæmorrhage occurred from the gum and its neighbourhood, and the loose box in which the mare stood had the appearance of a shambles. The hæmorrhage came on daily, and on each occasion lasted about an hour. Ultimately the mare was destroyed, and on post-mortem examination I found that the diseased condition of bone was confined purely to the upper jaw on either side; each of these was much swollen, had a spongy appearance, and was easily cut; the bone contained a large amount of cancellated tissue, and the normal cavities were almost completely obliterated.

I have no doubt it was a case of osteo-porosis, but of a *local* nature, as the lower jaw and all the other bones of the body were healthy.

Reviews.

VETERINARY NOTES FOR HORSE OWNERS: A MANUAL OF HORSE MEDICINE AND SURGERY WRITTEN IN POPULAR LANGUAGE. By M. HORACE HAYES, F.R.C.V.S., late Captain "The Buffs." Sixth edition. Hurst, Blackett, & Co., 13 Great Marlborough Street.

The fact of a book running into six editions should of itself show that it supplies a want. The first edition of Captain Hayes' Veterinary Notes was brought out in 1876; the present one runs into over 800 pages, with 125 new illustrations, most being original photographs taken by the author. A noticeable feature are the life-size photographs, showing the dentition of the horse at various ages, an achievement that, so far as we are aware, is the first of its kind, and in addition to illustrations of the incisors, Captain Hayes has also given the molars as well. There is some sound advice on the examination of horses for soundness and defects that are such, together with others for which a horse should not be rejected. We trust that the author will take our criticisms in good part, and not made in any carping spirit. The work avowedly is written for amateurs, and considering the fascination there is for "doctoring," we think that such drugs as eserine and hydrocyanic acid might have been omitted in the chapter on medicines, as they are dangerous in inexperienced hands, but perhaps it is considered that little harm could be done, as under the Pharmacy Act they could not well be obtained by a layman. Certain operations might also have been omitted or only mentioned, as the description is too brief for a professional and they are beyond the amateur; furthermore, we think that fomenting, massage, straining, and the use of the thermometer would have been better placed under the head of nursing than surgical operations. We are glad to notice the condemnation of indiscriminate docking. In a future edition we would suggest that *bandaging* be more fully treated upon, as we observe only those on the limbs are mentioned, nothing being said about the other parts of the body. Captain Hayes' experience abroad enables him to give some most useful notes on diseases in foreign countries that are but little known to the English practitioner.

VETERINARY HYGIENE. By Señor FERRUCCIO FAELLI, Professor of Zootechnie and Hygiene, Turin Veterinary School. Published by Societa editrice libraria, Milan. Price 15 francs. 1 vol., 636 pages, 276 illustrations.

The author first considers soils, water, and air, the physical and chemical changes they undergo, the micro-organisms that are found in them, and the influences they exert on the body. In the chapter on air he considers the effects of climates. Señor Faelli's assistant, Señor Maccagno, has contributed an exhaustive section on buildings, together with disinfection and disinfectants. Harness and gear are also considered, and the author is emphatic on the part they play in the spread of contagious disease; he also discusses grooming, clipping, washing, massage, &c. More than 200 pages are denoted to feeding, and references are given to a large number of authorities.

The work is in Italian, which unfortunately places it out of reach of the majority of English practitioners, but it appears to be one of the most comprehensive on this subject that has been published.

Parliamentary News.

CAPTAIN NORTON (Newington West) said he wished to draw the attention of the House to the question of the status of the officers of the Army Veterinary Department, to the insufficiency of their pay, and to limitation of their prospective career in the Army. This subject had been repeatedly raised by himself before the war, and even that very day by a question to the Secretary of State for War. The fact was that so great was the discontent of veterinarians that the Department was unable to obtain the requisite number of officers, and at present there were thirty vacancies without candidates. It would be in the recollection of hon. members that during the late war, in consequence of the dearth of veterinary officers, vessels carrying horses to South Africa were despatched without veterinary surgeons on board, with the result that a large proportion of the horses were lost in the course of the voyage; and when the remainder were landed in South Africa they were rushed up country in an absolutely unprepared state for active work in the field. In fact millions had had to be paid in consequence of this special Department not being sufficiently staffed. He insisted that the Secretary for War should so improve the position of the veterinary surgeons in the Army, more especially by granting combatant rank, better pay, and a retiring allowance after so many years of service, that competent candidates would be induced to offer their services. Promises to the effect that this question would be investigated had been made before the war broke out, but the investigation was delayed. Now that the war was over he was given to understand that a Committee was sitting considering the matter, and he thought that this was a suitable opportunity for the right hon. gentleman to state what he had been able to do in regard to it.

ARMY VETERINARY OFFICERS.

Captain NORTON.—I beg to ask the Secretary of State for War if he can state what the proposed improvements in the pay and prospects of the Army veterinary officers will be, and upon what date they will come into force, seeing that the Army Veterinary Department is below its authorised peace establishment.

Mr. BRODRICK.—The Committee which is considering these matters has not yet reported.

ARMY REMOUNT DEPARTMENT.

Captain NORTON.—I beg to ask the Secretary of State for War whether he will consider the advisability of employing retired officers of the Army Veterinary Department as purchasing officers under the proposed rules for the re-organisation of the Army Remount Department, in view of the saving to the State that would be effected thereby.

Mr. BRODRICK.—A veterinary officer's responsibility is purely professional, and is limited to the soundness and age of the animals purchased. It is not considered advisable to employ him as a purchasing officer, who has to determine the fitness of horses in point of breeding, appearance, strength, and action.

RINDERPEST STATISTICS FOR CAPE COLONY.

BROUGHT UP TO 26TH JANUARY 1903.

DISTRICT.	Number of Centres still Quarantined.	Approximate Total Loss since commencement of Outbreak.	Number of Cattle in affected Herds.	Percentage of Mortality.
Aliwal North, . .	1	213	723	29 per cent.
Albert, . . .	*Nil.*	109	1,397	7 „
Barkly East, . .	1	353	1,161	30 „
Barkly West, . .	*Nil.*	4	70	5 „
East London, . .	1	52	750	6 „
Elliot, ...	*Nil.*	113	664	17 „
Engcobo, . . .	1	294	2,473	11 „
Glen Grey, . . .	2	136	875	15 „
Hay, ...	*Nil.*	130	438	29 „
Herbert, . . .	*Nil.*	79	431	18 „
Herschel, . . .	6	640	4,809	13 „
Kimberley, . . .	*Nil.*	11	223	4 „
Maclear, . . .	*Nil.*	38	107	35 „
Mafeking, . . .	*Nil.*	1577	6,913	22 „
Queenstown, . .	1	21	95	22 „
Taungs, . . .	1	503	3,067	16 „
Tsomo, . . .	*Nil.*	6	106	5 „
Umtata, . . .	*Nil.*	22	65	33 „
Vryburg, . . .	*Nil.*	228	1,311	17 „
Wodehouse, . .	1	173	1,996	8 „
Xalanga, . . .	3	11	171	6 „
21	18	4713	27,845	16.92 per cent.

Upon a comparison with the Statistical Returns rendered to December 20th, it will be seen that 185 additional cases and 19 deaths have occurred during the period December 20th to January 26th. The number of quarantined areas has been reduced from 29 to 18.

Communications, Books, Journals, &c., Received.

Agricultural Journal (Cape of Good Hope); Berliner Thierärztliche Wochenschrift; La Clinica Veterinaria (Milan); Deutsche Thierärztliche Wochenschrift; Tannoform in Veterinary Medicine (March); The Sanitary Journal; Scottish Medical and Surgical Journal; Veterinary Record; La Riforma Veterinaria; Le Mois Scientifique (Paris); L'Echo Vétérinaire (Liège); Annales de Médecine Vétérinaire (Brussels); Johns Hopkins Hospital Reports; Journal of Comparative Medicine and Veterinary Archives; Recueil de Médecine Vétérinaire; Gazette Médicale de Paris; Modern Medicine; Johns Hopkins Hospital Bulletin; Il Veterinario di Campagna (Moncalieri); Le Bulletin Vétérinaire (Orleans); Revista de Medicina Veterinaria (Bucarist); La Revista Veterinaria (Buenos Aires); Zeitschrift für Fleisch-und Milchhygiene (Berlin); Buletinul Societatii de Sciinte diu Bucuresci-Romania; The Meat Trades Journal; The Dental Record.

CORRIGENDUM.

On page 177 of JOURNAL for March, paragraph 4, line 2, for "disnin, dormiol, sodipin," *read* "dionin, dormiol, iodipin."